<110> Gaiger, Alexander
       Algate, Paul A.
       Mannion, Jane
       Clapper, Jonathan David
       Wang, Aijun
       Ordonez, Nadia
       Carter, Lauren
       McNeill, Patricia Dianne
       Corixa Corporation

<120> Compositions and Methods for the Detection, Diagnosis
       and Therapy of Hematological Malignancies

<130> 014058-014402PC

<140> US 10/501,841
<141> 2004-07-14

<150> US 10/057,475
<151> 2002-01-22

<150> WO PCT/US03/02353
<151> 2003-01-22

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<170> PatentIn Ver. 2.1

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Val Gly Gly Ala Val Thr Phe Pro Leu Lys Ser Lys Val Lys Gln Val
            35              40                  45

Asp Ser Ile Val Trp Thr Phe Asn Thr Thr Pro Leu Val Thr Ile Gln
        50              55                  60

Pro Glu Gly Gly Thr Ile Ile Val Thr Gln Asn Arg Asn Arg Glu Arg
 65              70                  75                  80

Val Asp Phe Pro Asp Gly Gly Tyr Ser Leu Lys Leu Ser Lys Leu Lys
                85              90                  95

Lys Asn Asp Ser Gly Ile Tyr Tyr Val Gly Ile Tyr Ser Ser Ser Leu
                100             105                 110

Gln Gln Pro Ser Thr Gln Glu Tyr Val Leu His Val Tyr Glu His Leu
            115             120                 125

Ser Lys Pro Lys Val Thr Met Gly Leu Gln Ser Asn Lys Asn Gly Thr
        130             135                 140

Cys Val Thr Asn Leu Thr Cys Cys Met Glu His Gly Glu Glu Asp Val
145             150                 155                 160

Ile Tyr Thr Trp Lys Ala Leu Gly Gln Ala Ala Asn Glu Ser His Asn
                165                 170                 175
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Gly Ser Ile Leu Pro Ile Ser Trp Arg Trp Gly Glu Ser Asp Met Thr
            180             185             190

Phe Ile Cys Val Ala Arg Asn Pro Val Ser Arg Asn Phe Ser Ser Pro
            195             200             205

Ile Leu Ala Arg Lys Leu Cys Glu Gly Ala Ala Asp Asp Pro Asp Ser
            210             215             220

Ser Met Val Leu Leu Cys Leu Leu Leu Val Pro Leu Leu Leu Ser Leu
225             230             235             240

Phe Val Leu Gly Leu Phe Leu Trp Phe Leu Lys Arg Glu Arg Gln Glu
            245             250             255

Glu Tyr Ile Glu Glu Lys Lys Arg Val Asp Ile Cys Arg Glu Thr Pro
            260             265             270

Asn Ile Cys Pro His Ser Gly Glu Asn Thr Glu Tyr Asp Thr Ile Pro
            275             280             285

His Thr Asn Arg Thr Ile Leu Lys Glu Asp Pro Ala Asn Thr Val Tyr
            290             295             300

Ser Thr Val Glu Ile Pro Lys Lys Met Glu Asn Pro His Ser Leu Leu
305             310             315             320

Thr Met Pro Asp Thr Pro Arg Leu Phe Ala Tyr Glu Asn Val Ile
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<213> Homo sapiens

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<210> 4
<211> 184
<212> PRT
<213> Homo sapiens

<400> 4
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Met Leu Gln Met Ala Gly Gln Cys Ser Gln Asn Glu Tyr Phe Asp Ser
  1             5               10              15
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3

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Leu Leu His Ala Cys Ile Pro Cys Gln Leu Arg Cys Ser Ser Asn Thr
        20              25              30

Pro Pro Leu Thr Cys Gln Arg Tyr Cys Asn Ala Ser Val Thr Asn Ser
        35              40              45

Val Lys Gly Thr Asn Ala Ile Leu Trp Thr Cys Leu Gly Leu Ser Leu
    50              55              60

Ile Ile Ser Leu Ala Val Phe Val Leu Met Phe Leu Leu Arg Lys Ile
65              70              75              80

Ser Ser Glu Pro Leu Lys Asp Glu Phe Lys Asn Thr Gly Ser Gly Leu
                85              90              95

Leu Gly Met Ala Asn Ile Asp Leu Glu Lys Ser Arg Thr Gly Asp Glu
        100             105             110

Ile Ile Leu Pro Arg Gly Leu Glu Tyr Thr Val Glu Glu Cys Thr Cys
        115             120             125

Glu Asp Cys Ile Lys Ser Lys Pro Lys Val Asp Ser Asp His Cys Phe
    130             135             140

Pro Leu Pro Ala Met Glu Glu Gly Ala Thr Ile Leu Val Thr Thr Lys
145             150             155             160

Thr Asn Asp Tyr Cys Lys Ser Leu Pro Ala Ala Leu Ser Ala Thr Glu
                165             170             175

Ile Glu Lys Ser Ile Ser Ala Arg
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<212> DNA
<213> Homo sapiens

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catcaagtgc ccacttcctg aaatgcatgt gaggatatat ctgtgccggg agatggctgg 180
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cagttcttcc aaattcgtaa ccagagttac acaccagct caaaggggca aggtccctcc 540
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ttcagtagca ggtgacaagc cccgaacctt cctgccatcc actacagcct caaaaatctc 660
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4

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<211> 390
<212> PRT
<213> Homo sapiens

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  1               5                  10                  15

Leu Arg Ile Leu Pro Glu Val Lys Val Glu Gly Glu Leu Gly Gly Ser
                 20                  25                  30

Val Thr Ile Lys Cys Pro Leu Pro Glu Met His Val Arg Ile Tyr Leu
            35                  40                  45

Cys Arg Glu Met Ala Gly Ser Gly Thr Cys Gly Thr Val Val Ser Thr
         50                  55                  60

Thr Asn Phe Ile Lys Ala Glu Tyr Lys Gly Arg Val Thr Leu Lys Gln
 65                  70                  75                  80

Tyr Pro Arg Lys Asn Leu Phe Leu Val Glu Val Thr Gln Leu Thr Glu
                 85                  90                  95

Ser Asp Ser Gly Val Tyr Ala Cys Gly Ala Gly Met Asn Thr Asp Arg
            100                 105                 110

Gly Lys Thr Gln Lys Val Thr Leu Asn Val His Ser Glu Tyr Glu Pro
         115                 120                 125

Ser Trp Glu Glu Gln Pro Met Pro Glu Thr Pro Lys Trp Phe His Leu
     130                 135                 140

Pro Tyr Leu Phe Gln Met Pro Ala Tyr Ala Ser Ser Ser Lys Phe Val
145                 150                 155                 160

Thr Arg Val Thr Thr Pro Ala Gln Arg Gly Lys Val Pro Pro Val His
                 165                 170                 175

His Ser Ser Pro Thr Thr Gln Ile Thr His Arg Pro Arg Val Ser Arg
             180                 185                 190

Ala Ser Ser Val Ala Gly Asp Lys Pro Arg Thr Phe Leu Pro Ser Thr
         195                 200                 205

Thr Ala Ser Lys Ile Ser Ala Leu Glu Gly Leu Leu Lys Pro Gln Thr
     210                 215                 220

Pro Ser Tyr Asn His His Thr Arg Leu His Arg Gln Arg Ala Leu Asp
225                 230                 235                 240

Tyr Gly Ser Gln Ser Gly Arg Glu Gly Gln Gly Phe His Ile Leu Ile
             245                 250                 255

Pro Thr Ile Leu Gly Leu Phe Leu Leu Ala Leu Leu Gly Leu Val Val
             260                 265                 270
```

5

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Lys Arg Ala Val Glu Arg Arg Lys Ala Leu Ser Arg Arg Ala Arg Arg
    275                 280             285
```

```
Leu Ala Val Arg Met Arg Ala Leu Glu Ser Ser Gln Arg Pro Arg Gly
    290                 295             300
```

```
Ser Pro Arg Pro Arg Ser Gln Asn Asn Ile Tyr Ser Ala Cys Pro Arg
305                 310             315                 320
```

```
Arg Ala Arg Gly Ala Asp Ala Ala Gly Thr Gly Glu Ala Pro Val Pro
            325             330             335
```

```
Gly Pro Gly Ala Pro Leu Pro Pro Ala Pro Leu Gln Val Ser Glu Ser
            340             345             350
```

```
Pro Trp Leu His Ala Pro Ser Leu Lys Thr Ser Cys Glu Tyr Val Ser
        355                 360             365
```

```
Leu Tyr His Gln Pro Ala Ala Met Met Glu Asp Ser Asp Ser Asp Asp
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<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Ly1452 open
      reading frame His tag fusion

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6

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<210> 8
<211> 669
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Lyl452 open
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            20                  25                  30

Ile Asp Gly Ser Pro Arg Leu Leu Asn Thr Asp His Pro Pro Cys Gln
        35                  40                  45

Leu Asp Ile Arg Leu Met Arg His Lys Ala Val Trp Ile Asn Pro Gln
    50                  55                  60

Asp Val Gln Gln Gln Pro Gln Asp Leu Gln Ser Gln Val Pro Ala Ala
 65                  70                  75                  80

Gly Asn Ser Gly Thr His Phe Val Thr Asp Ala Ala Ser Pro Ser Gly
                85                  90                  95

Pro Ser Pro Ser Cys Leu Gly Asp Ser Leu Ala Glu Thr Thr Leu Ser
            100                 105                 110

Glu Asp Thr Thr Asp Ser Val Gly Ser Ala Ser Pro His Gly Ser Ser
            115                 120                 125

Glu Lys Ser Ser Ser Phe Ser Leu Ser Ser Thr Glu Val His Met Val
    130                 135                 140

Arg Pro Gly Tyr Ser His Arg Val Ser Leu Pro Thr Ser Pro Gly Ile
145                 150                 155                 160

Leu Ala Thr Ser Pro Tyr Pro Glu Thr Asp Ser Ala Phe Phe Glu Pro
                165                 170                 175

Ser His Leu Thr Ser Ala Ala Asp Glu Gly Ala Val Gln Val Ser Arg
            180                 185                 190

Arg Thr Ile Ser Ser Asn Ser Phe Ser Pro Glu Val Phe Val Leu Pro
        195                 200                 205

Val Asp Val Glu Lys Glu Asn Ala His Phe Tyr Val Ala Asp Met Ile
    210                 215                 220
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7
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Ile Ser Ala Met Glu Lys Met Lys Cys Asn Ile Leu Ser Gln Gln Gln
225   230   235   240

Thr Glu Ser Trp Ser Lys Glu Val Ser Gly Leu Leu Gly Ser Asp Gln
             245   250   255

Pro Asp Ser Glu Met Thr Phe Asp Thr Asn Ile Lys Gln Glu Ser Gly
         260   265   270

Ser Ser Thr Ser Ser Tyr Ser Gly Tyr Glu Gly Cys Ala Val Leu Gln
         275   280   285

Val Ser Pro Val Thr Glu Thr Arg Thr Tyr His Asp Val Lys Glu Ile
    290   295   300

Cys Lys Cys Asp Val Asp Glu Phe Val Ile Leu Glu Leu Gly Asp Phe
305   310   315   320

Asn Asp Ile Thr Glu Thr Cys Ser Cys Ser Cys Ser Ser Ser Lys Ser
             325   330   335

Val Thr Tyr Glu Pro Asp Phe Asn Ser Ala Glu Leu Leu Ala Lys Glu
         340   345   350

Leu Tyr Arg Val Phe Gln Lys Cys Trp Ile Leu Ser Val Val Asn Ser
        355   360   365

Gln Leu Ala Gly Ser Leu Ser Ala Ala Gly Ser Ile Val Val Asn Glu
    370   375   380

Glu Cys Val Arg Lys Asp Phe Glu Ser Ser Met Asn Val Val Gln Glu
385   390   395   400

Ile Lys Phe Lys Ser Arg Ile Arg Gly Thr Glu Asp Trp Ala Pro Pro
             405   410   415

Arg Phe Gln Ile Ile Phe Asn Ile His Pro Pro Leu Lys Arg Asp Leu
         420   425   430

Val Val Ala Ala Gln Asn Phe Phe Cys Ala Gly Cys Gly Thr Pro Val
    435   440   445

Glu Pro Lys Phe Val Lys Arg Leu Arg Tyr Cys Glu Tyr Leu Gly Lys
    450   455   460

Tyr Phe Cys Asp Cys Cys His Ser Tyr Ala Glu Ser Cys Ile Pro Ala
465   470   475   480

Arg Ile Leu Met Met Trp Asp Phe Lys Lys Tyr Tyr Val Ser Asn Phe
             485   490   495

Ser Lys Gln Leu Leu Asp Ser Ile Trp His Gln Pro Ile Phe Asn Leu
         500   505   510

Leu Ser Ile Gly Gln Ser Leu Tyr Ala Lys Ala Lys Glu Leu Asp Arg
         515   520   525

Val Lys Glu Ile Gln Glu Gln Leu Phe His Ile Lys Lys Leu Leu Lys
    530   535   540

8

Thr Cys Arg Phe Ala Asn Ser Ala Leu Lys Glu Phe Glu Gln Val Pro
545   550   555   560

Gly His Leu Thr Asp Glu Leu His Leu Phe Ser Leu Glu Asp Leu Val
                565   570   575

Arg Ile Lys Lys Gly Leu Leu Ala Pro Leu Leu Lys Asp Ile Leu Lys
                580   585   590

Ala Ser Leu Ala His Val Ala Gly Cys Glu Leu Cys Gln Gly Lys Gly
        595   600   605

Phe Ile Cys Glu Phe Cys Gln Asn Thr Thr Val Ile Phe Pro Phe Gln
        610   615   620

Thr Ala Thr Cys Arg Arg Cys Ser Ala Cys Arg Ala Cys Phe His Lys
625   630   635   640

Gln Cys Phe Gln Ser Ser Glu Cys Pro Arg Cys Ala Arg Ile Thr Ala
                645   650   655

Arg Arg Lys Leu Leu Glu Ser Val Ala Ser Ala Ala Thr
                660   665

<210> 9
<211> 3604
<212> DNA
<213> Homo sapiens

<400> 9
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<211> 662
<212> PRT
<213> Homo sapiens

<400> 10

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                20                  25                  30

Leu Asn Thr Asp His Pro Pro Cys Gln Leu Asp Ile Arg Leu Met Arg
            35                  40                  45

His Lys Ala Val Trp Ile Asn Pro Gln Asp Val Gln Gln Pro Gln
        50                  55                  60

Asp Leu Gln Ser Gln Val Pro Ala Ala Gly Asn Ser Gly Thr His Phe
65                  70                  75                  80

Val Thr Asp Ala Ala Ser Pro Ser Gly Pro Ser Pro Ser Cys Leu Gly
                85                  90                  95

Asp Ser Leu Ala Glu Thr Thr Leu Ser Glu Asp Thr Thr Asp Ser Val
                100                 105                 110
```

```
Gly Ser Ala Ser Pro His Gly Ser Ser Glu Lys Ser Ser Ser Phe Ser
        115             120                 125

Leu Ser Ser Thr Glu Val His Met Val Arg Pro Gly Tyr Ser His Arg
    130             135                 140

Val Ser Leu Pro Thr Ser Pro Gly Ile Leu Ala Thr Ser Pro Tyr Pro
145                 150                 155                 160

Glu Thr Asp Ser Ala Phe Phe Glu Pro Ser His Leu Thr Ser Ala Ala
                165                 170                 175

Asp Glu Gly Ala Val Gln Val Ser Arg Arg Thr Ile Ser Ser Asn Ser
            180                 185                 190

Phe Ser Pro Glu Val Phe Val Leu Pro Val Asp Val Glu Lys Glu Asn
        195                 200                 205

Ala His Phe Tyr Val Ala Asp Met Ile Ile Ser Ala Met Glu Lys Met
    210                 215                 220

Lys Cys Asn Ile Leu Ser Gln Gln Gln Thr Glu Ser Trp Ser Lys Glu
225                 230                 235                 240

Val Ser Gly Leu Leu Gly Ser Asp Gln Pro Asp Ser Glu Met Thr Phe
            245                 250                 255

Asp Thr Asn Ile Lys Gln Glu Ser Gly Ser Ser Thr Ser Ser Tyr Ser
            260                 265                 270

Gly Tyr Glu Gly Cys Ala Val Leu Gln Val Ser Pro Val Thr Glu Thr
        275                 280                 285

Arg Thr Tyr His Asp Val Lys Glu Ile Cys Lys Cys Asp Val Asp Glu
    290                 295                 300

Phe Val Ile Leu Glu Leu Gly Asp Phe Asn Asp Ile Thr Glu Thr Cys
305                 310                 315                 320

Ser Cys Ser Cys Ser Ser Ser Lys Ser Val Thr Tyr Glu Pro Asp Phe
            325                 330                 335

Asn Ser Ala Glu Leu Leu Ala Lys Glu Leu Tyr Arg Val Phe Gln Lys
        340                 345                 350

Cys Trp Ile Leu Ser Val Val Asn Ser Gln Leu Ala Gly Ser Leu Ser
    355                 360                 365

Ala Ala Gly Ser Ile Val Val Asn Glu Glu Cys Val Arg Lys Asp Phe
    370                 375                 380

Glu Ser Ser Met Asn Val Val Gln Glu Ile Lys Phe Lys Ser Arg Ile
385                 390                 395                 400

Arg Gly Thr Glu Asp Trp Ala Pro Pro Arg Phe Gln Ile Ile Phe Asn
            405                 410                 415

Ile His Pro Pro Leu Lys Arg Asp Leu Val Val Ala Ala Gln Asn Phe
        420                 425                 430
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11

Phe Cys Ala Gly Cys Gly Thr Pro Val Glu Pro Lys Phe Val Lys Arg
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Leu Arg Tyr Cys Glu Tyr Leu Gly Lys Tyr Phe Cys Asp Cys Cys His
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Ser Tyr Ala Glu Ser Cys Ile Pro Ala Arg Ile Leu Met Met Trp Asp
465   470   475   480

Phe Lys Lys Tyr Tyr Val Ser Asn Phe Ser Lys Gln Leu Leu Asp Ser
                485   490   495

Ile Trp His Gln Pro Ile Phe Asn Leu Leu Ser Ile Gly Gln Ser Leu
            500   505   510

Tyr Ala Lys Ala Lys Glu Leu Asp Arg Val Lys Glu Ile Gln Glu Gln
        515   520   525

Leu Phe His Ile Lys Lys Leu Leu Lys Thr Cys Arg Phe Ala Asn Ser
        530   535   540

Ala Leu Lys Glu Phe Glu Gln Val Pro Gly His Leu Thr Asp Glu Leu
545   550   555   560

His Leu Phe Ser Leu Glu Asp Leu Val Arg Ile Lys Lys Gly Leu Leu
                565   570   575

Ala Pro Leu Leu Lys Asp Ile Leu Lys Ala Ser Leu Ala His Val Ala
        580   585   590

Gly Cys Glu Leu Cys Gln Gly Lys Gly Phe Ile Cys Glu Phe Cys Gln
        595   600   605

Asn Thr Thr Val Ile Phe Pro Phe Gln Thr Ala Thr Cys Arg Arg Cys
        610   615   620

Ser Ala Cys Arg Ala Cys Phe His Lys Gln Cys Phe Gln Ser Ser Glu
625   630   635   640

Cys Pro Arg Cys Ala Arg Ile Thr Ala Arg Arg Lys Leu Leu Glu Ser
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Val Ala Ser Ala Ala Thr
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<211> 2494
<212> DNA
<213> Homo sapiens

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12

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<211> 635
<212> PRT
<213> Homo sapiens

<400> 12
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Glu Gly Ile Ser Asp His Ser Gly Ile Ile Asp Gly Ser Pro Arg Leu
             20                  25                  30

Leu Asn Thr Asp His Pro Pro Cys Gln Leu Asp Ile Arg Leu Met Arg
         35                  40                  45

His Lys Ala Val Trp Ile Asn Pro Gln Asp Val Gln Gln Gln Pro Gln
     50                  55                  60

Asp Leu Gln Ser Gln Val Pro Ala Ala Gly Asn Ser Gly Thr His Phe
 65                  70                  75                  80

Val Thr Asp Ala Ala Ser Pro Ser Gly Pro Ser Pro Ser Cys Leu Gly
                 85                  90                  95

Asp Ser Leu Ala Glu Thr Thr Leu Ser Glu Asp Thr Thr Asp Ser Val
             100                 105                 110
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13

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Gly Ser Ala Ser Pro His Gly Ser Ser Glu Lys Ser Ser Ser Phe Ser
        115                 120             125

Leu Ser Ser Thr Glu Val His Met Val Arg Pro Gly Tyr Ser His Arg
        130             135             140

Val Ser Leu Pro Thr Ser Pro Gly Ile Leu Ala Thr Ser Pro Tyr Pro
145                 150             155                 160

Glu Thr Asp Ser Ala Phe Phe Glu Pro Ser His Leu Thr Ser Ala Ala
                165             170             175

Asp Glu Gly Ala Val Gln Val Ser Arg Arg Thr Ile Ser Ser Asn Ser
            180             185             190

Phe Ser Pro Glu Val Phe Val Leu Pro Val Asp Val Glu Lys Glu Asn
        195             200             205

Ala His Phe Tyr Val Ala Asp Met Ile Ile Ser Ala Met Glu Lys Met
    210             215             220

Lys Cys Asn Ile Leu Ser Gln Gln Gln Thr Glu Ser Trp Ser Lys Glu
225                 230             235                 240

Val Ser Gly Leu Leu Gly Ser Asp Gln Pro Asp Ser Glu Met Thr Phe
            245             250             255

Asp Thr Asn Ile Lys Gln Glu Ser Gly Ser Ser Thr Ser Ser Tyr Ser
            260             265             270

Gly Tyr Glu Gly Cys Ala Val Leu Gln Val Ser Pro Val Thr Glu Thr
        275             280             285

Arg Thr Tyr His Asp Val Lys Glu Ile Cys Lys Cys Asp Val Asp Glu
    290             295             300

Phe Val Ile Leu Glu Leu Gly Asp Phe Asn Asp Ile Thr Glu Thr Cys
305                 310             315                 320

Ser Cys Ser Cys Ser Ser Ser Lys Ser Val Thr Tyr Glu Pro Asp Phe
            325             330             335

Asn Ser Ala Glu Leu Leu Ala Lys Glu Leu Tyr Arg Val Phe Gln Lys
        340             345             350

Cys Trp Ile Leu Ser Val Val Asn Ser Gln Leu Ala Gly Ser Leu Ser
        355             360             365

Ala Ala Gly Ser Ile Val Val Asn Glu Glu Cys Val Arg Lys Asp Phe
    370             375             380

Glu Ser Ser Met Asn Val Val Gln Glu Ile Lys Phe Lys Ser Arg Ile
385             390             395             400

Arg Gly Thr Glu Asp Trp Ala Pro Pro Arg Phe Gln Ile Ile Phe Asn
            405             410             415

Ile His Pro Pro Leu Lys Arg Asp Leu Val Val Ala Ala Gln Asn Phe
        420             425             430
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14

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Phe Cys Ala Gly Cys Gly Thr Pro Val Glu Pro Lys Phe Val Lys Arg
        435                 440                 445

Leu Arg Tyr Cys Glu Tyr Leu Gly Lys Tyr Phe Cys Asp Cys Cys His
        450                 455                 460

Ser Tyr Ala Glu Ser Cys Ile Pro Ala Arg Ile Leu Met Met Trp Asp
465                 470                 475                 480

Phe Lys Lys Tyr Tyr Val Ser Asn Phe Ser Lys Gln Leu Leu Asp Ser
                485                 490                 495

Ile Trp His Gln Pro Ile Phe Asn Leu Leu Ser Ile Gly Gln Ser Leu  ı
        500                 505                 510

Tyr Ala Lys Ala Lys Glu Leu Asp Arg Val Lys Glu Ile Gln Glu Gln
        515                 520                 525

Leu Phe His Ile Lys Lys Leu Leu Lys Thr Cys Arg Phe Ala Asn Ser
        530                 535                 540

Cys Val Lys Glu Arg Ala Leu Phe Val Asn Phe Ala Arg Ile Arg Leu
545                 550                 555                 560

Ser Ser Ser His Phe Arg Gln Gln His Val Glu Asp Val Gln Arg Ala
                565                 570                 575

Gly Leu Ala Phe Thr Asn Ser Ala Ser Ser Pro Pro Ser Ala Pro Gly
                580                 585                 590

Val Arg Gly Ser Gln Arg Gly Glu Asn Phe Trp Lys Val Trp Pro Leu
        595                 600                 605

Gln Gln His Asp Ala Pro Glu Tyr Cys Glu Lys Asp Cys Ser Thr Cys
        610                 615                 620

Leu Met Ile Thr Pro Ile Cys Val Tyr Tyr Trp
625                 630                 635


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<211> 148
<212> DNA
<213> Homo sapiens

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<211> 4094
<212> DNA
<213> Homo sapiens

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15

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16

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<400> 15

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Arg Ile Ser Tyr Tyr Ser Thr Pro Ile Ala Val Gly Thr Val Ile Arg
         35                  40                  45

Tyr Ser Cys Ser Gly Thr Phe Arg Leu Ile Gly Glu Lys Ser Leu Leu
     50                  55                  60

Cys Ile Thr Lys Asp Lys Val Asp Gly Thr Trp Asp Lys Pro Ala Pro
 65                  70                  75                  80

Lys Cys Glu Tyr Phe Asn Lys Tyr Ser Ser Cys Pro Glu Pro Ile Val
                 85                  90                  95

Pro Gly Gly Tyr Lys Ile Arg Gly Ser Thr Pro Tyr Arg His Gly Asp
            100                 105                 110

Ser Val Thr Phe Ala Cys Lys Thr Asn Phe Ser Met Asn Gly Asn Lys
         115                 120                 125

Ser Val Trp Cys Gln Ala Asn Asn Met Trp Gly Pro Thr Arg Leu Pro
     130                 135                 140

Thr Cys Val Ser Val Phe Pro Leu Glu Cys Pro Ala Leu Pro Met Ile
145                 150                 155                 160

His Asn Gly His His Thr Ser Glu Asn Val Gly Ser Ile Ala Pro Gly
                165                 170                 175

Leu Ser Val Thr Tyr Ser Cys Glu Ser Gly Tyr Leu Leu Val Gly Glu
            180                 185                 190

Lys Ile Ile Asn Cys Leu Ser Ser Gly Lys Trp Ser Ala Val Pro Pro
            195                 200                 205

Thr Cys Glu Glu Ala Arg Cys Lys Ser Leu Gly Arg Phe Pro Asn Gly
     210                 215                 220

Lys Val Lys Glu Pro Pro Ile Leu Arg Val Gly Val Thr Ala Asn Phe
225                 230                 235                 240

Phe Cys Asp Glu Gly Tyr Arg Leu Gln Gly Pro Pro Ser Ser Arg Cys
                245                 250                 255
```

17

```
Val Ile Ala Gly Gln Gly Val Ala Trp Thr Lys Met Pro Val Cys Glu
            260             265             270

Glu Ile Phe Cys Pro Ser Pro Pro Ile Leu Asn Gly Arg His Ile
        275             280             285

Gly Asn Ser Leu Ala Asn Val Ser Tyr Gly Ser Ile Val Thr Tyr Thr
    290             295             300

Cys Asp Pro Asp Pro Glu Glu Gly Val Asn Phe Ile Leu Ile Gly Glu
305             310             315             320

Ser Thr Leu Arg Cys Thr Val Asp Ser Gln Lys Thr Gly Thr Trp Ser
            325             330             335

Gly Pro Ala Pro Arg Cys Glu Leu Ser Thr Ser Ala Val Gln Cys Pro
            340             345             350

His Pro Gln Ile Leu Arg Gly Arg Met Val Ser Gly Gln Lys Asp Arg
        355             360             365

Tyr Thr Tyr Asn Asp Thr Val Ile Phe Ala Cys Met Phe Gly Phe Thr
    370             375             380

Leu Lys Gly Ser Lys Gln Ile Arg Cys Asn Ala Gln Gly Thr Trp Glu
385             390             395             400

Pro Ser Ala Pro Val Cys Glu Lys Glu Cys Gln Ala Pro Pro Asn Ile
            405             410             415

Leu Asn Gly Gln Lys Glu Asp Arg His Met Val Arg Phe Asp Pro Gly
        420             425             430

Thr Ser Ile Lys Tyr Ser Cys Asn Pro Gly Tyr Val Leu Val Gly Glu
        435             440             445

Glu Ser Ile Gln Cys Thr Ser Glu Gly Val Trp Thr Pro Pro Val Pro
    450             455             460

Gln Cys Lys Val Ala Ala Cys Glu Ala Thr Gly Arg Gln Leu Leu Thr
465             470             475             480

Lys Pro Gln His Gln Phe Val Arg Pro Asp Val Asn Ser Ser Cys Gly
            485             490             495

Glu Gly Tyr Lys Leu Ser Gly Ser Val Tyr Gln Glu Cys Gln Gly Thr
            500             505             510

Ile Pro Trp Phe Met Glu Ile Arg Leu Cys Lys Glu Ile Thr Cys Pro
        515             520             525

Pro Pro Pro Val Ile Tyr Asn Gly Ala His Thr Gly Ser Ser Leu Glu
    530             535             540

Asp Phe Pro Tyr Gly Thr Thr Val Thr Tyr Thr Cys Asn Pro Gly Pro
545             550             555             560

Glu Arg Gly Val Glu Phe Ser Leu Ile Gly Glu Ser Thr Ile Arg Cys
            565             570             575
```

18

```
Thr Ser Asn Asp Gln Glu Arg Gly Thr Trp Ser Gly Pro Ala Pro Leu
            580                 585                 590

Cys Lys Leu Ser Leu Leu Ala Val Gln Cys Ser His Val His Ile Ala
            595                 600                 605

Asn Gly Tyr Lys Ile Ser Gly Lys Glu Ala Pro Tyr Phe Tyr Asn Asp
    610                 615                 620

Thr Val Thr Phe Lys Cys Tyr Ser Gly Phe Thr Leu Lys Gly Ser Ser
625                 630                 635                 640

Gln Ile Arg Cys Lys Ala Asp Asn Thr Trp Asp Pro Glu Ile Pro Val
            645                 650                 655

Cys Glu Lys Glu Thr Cys Gln His Val Arg Gln Ser Leu Gln Glu Leu
            660                 665                 670

Pro Ala Gly Ser Arg Val Glu Leu Val Asn Thr Ser Cys Gln Asp Gly
            675                 680                 685

Tyr Gln Leu Thr Gly His Ala Tyr Gln Met Cys Gln Asp Ala Glu Asn
    690                 695                 700

Gly Ile Trp Phe Lys Lys Ile Pro Leu Cys Lys Val Ile His Cys His
705                 710                 715                 720

Pro Pro Pro Val Ile Val Asn Gly Lys His Thr Gly Met Met Ala Glu
            725                 730                 735

Asn Phe Leu Tyr Gly Asn Glu Val Ser Tyr Glu Cys Asp Gln Gly Phe
            740                 745                 750

Tyr Leu Leu Gly Glu Lys Lys Leu Gln Cys Arg Ser Asp Ser Lys Gly
            755                 760                 765

His Gly Ser Trp Ser Gly Pro Ser Pro Gln Cys Leu Arg Ser Pro Pro
    770                 775                 780

Val Thr Arg Cys Pro Asn Pro Glu Val Lys His Gly Tyr Lys Leu Asn
785                 790                 795                 800

Lys Thr His Ser Ala Tyr Ser His Asn Asp Ile Val Tyr Val Asp Cys
            805                 810                 815

Asn Pro Gly Phe Ile Met Asn Gly Ser Arg Val Ile Arg Cys His Thr
            820                 825                 830

Asp Asn Thr Trp Val Pro Gly Val Pro Thr Cys Met Lys Lys Ala Phe
            835                 840                 845

Ile Gly Cys Pro Pro Pro Pro Lys Thr Pro Asn Gly Asn His Thr Gly
    850                 855                 860

Gly Asn Ile Ala Arg Phe Ser Pro Gly Met Ser Ile Leu Tyr Ser Cys
865                 870                 875                 880

Asp Gln Gly Tyr Leu Leu Val Gly Glu Ala Leu Leu Leu Cys Thr His
                885                 890                 895
```

19

Glu Gly Thr Trp Ser Gln Pro Ala Pro His Cys Lys Glu Val Asn Cys
            900   905   910

Ser Ser Pro Ala Asp Met Asp Gly Ile Gln Lys Gly Leu Glu Pro Arg
            915   920   925

Lys Met Tyr Gln Tyr Gly Ala Val Val Thr Leu Glu Cys Glu Asp Gly
    930   935   940

Tyr Met Leu Glu Gly Ser Pro Gln Ser Gln Cys Gln Ser Asp His Gln
945   950   955   960

Trp Asn Pro Pro Leu Ala Val Cys Arg Ser Arg Ser Leu Ala Pro Val
            965   970   975

Leu Cys Gly Ile Ala Ala Gly Leu Ile Leu Leu Thr Phe Leu Ile Val
            980   985   990

Ile Thr Leu Tyr Val Ile Ser Lys His Arg Glu Arg Asn Tyr Tyr Thr
            995   1000   1005

Asp Thr Ser Gln Lys Glu Ala Phe His Leu Glu Ala Arg Glu Val Tyr
    1010   1015   1020

Ser Val Asp Pro Tyr Asn Pro Ala Ser
1025   1030

<210> 16
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<213> Homo sapiens

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<211> 4191
<212> DNA
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21

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<211> 1606
<212> PRT
<213> Homo sapiens

<400> 18

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Asn Cys Ala Gly His Leu Ser Gly Ser Leu Arg Thr Ile Gly Ala Val
             20                  25                  30

Ala Val Gly Gln Leu Gly Val Arg Val Phe His Ser Ser Pro Ala Ala
         35                  40                  45

Ser Ser Leu Asp Phe Ile Gly Gly Pro Ala Ile Leu Leu Gly Leu Ile
     50                  55                  60

Ser Leu Ala Thr Asp Asp His Thr Met Tyr Ala Ala Val Lys Val Leu
 65                  70                  75                  80

His Ser Val Leu Thr Ser Asn Ala Met Cys Asp Phe Leu Met Gln His
             85                  90                  95

Ile Cys Gly Tyr Gln Ile Met Ala Phe Leu Leu Arg Lys Lys Ala Ser
             100                 105                 110

Leu Leu Asn His Arg Ile Phe Gln Leu Ile Leu Ser Val Ala Gly Thr
             115                 120                 125

Val Glu Leu Gly Phe Arg Ser Ser Ala Ile Thr Asn Thr Gly Val Phe
     130                 135                 140

Gln His Ile Leu Cys Asn Phe Glu Leu Trp Met Asn Thr Ala Asp Asn
145                 150                 155                 160

Leu Glu Leu Ser Leu Phe Ser His Leu Leu Glu Ile Leu Gln Ser Pro
             165                 170                 175

Arg Glu Gly Pro Arg Asn Ala Glu Ala Ala His Gln Ala Gln Leu Ile
             180                 185                 190

Pro Lys Leu Ile Phe Leu Phe Asn Glu Pro Ser Leu Ile Pro Ser Lys
             195                 200                 205

Ile Pro Thr Ile Ile Gly Ile Leu Ala Cys Gln Leu Arg Gly His Phe
             210                 215                 220

Ser Thr Gln Asp Leu Leu Arg Ile Gly Leu Phe Val Val Tyr Thr Leu
225                 230                 235                 240

Lys Pro Ser Ser Val Asn Glu Arg Gln Ile Cys Met Asp Gly Ala Leu
             245                 250                 255
```

22

```
Asp Pro Ser Leu Pro Ala Gly Ser Gln Thr Ser Gly Lys Thr Ile Trp
        260             265             270

Leu Arg Asn Gln Leu Leu Glu Met Leu Leu Ser Val Ile Ser Ser Pro
        275             280             285

Gln Leu His Leu Ser Ser Glu Ser Lys Glu Glu Met Phe Leu Lys Leu
    290             295             300

Gly Pro Asp Trp Phe Leu Leu Leu Gln Gly His Leu His Ala Ser
305             310             315             320

Thr Thr Val Leu Ala Leu Lys Leu Leu Leu Tyr Phe Leu Ala Ser Pro
            325             330             335

Ser Leu Arg Thr Arg Phe Arg Asp Gly Leu Cys Ala Gly Ser Trp Val
        340             345             350

Glu Arg Ser Thr Glu Gly Val Asp Ile Val Met Asp Asn Leu Lys Ser
        355             360             365

Gln Ser Pro Leu Pro Glu Gln Ser Pro Cys Leu Leu Pro Gly Phe Arg
    370             375             380

Val Leu Asn Asp Phe Leu Ala His His Val His Ile Pro Glu Val Tyr
385             390             395             400

Leu Ile Val Ser Thr Phe Phe Leu Gln Thr Pro Leu Thr Glu Leu Met
            405             410             415

Asp Gly Pro Lys Asp Ser Leu Asp Ala Met Leu Gln Trp Leu Leu Gln
        420             425             430

Arg His His Gln Glu Glu Val Leu Gln Ala Gly Leu Cys Thr Glu Gly
        435             440             445

Ala Leu Leu Leu Leu Glu Met Leu Lys Ala Thr Met Ser Gln Pro Leu
    450             455             460

Ala Gly Ser Glu Asp Gly Ala Trp Ala Gln Thr Phe Pro Ala Ser Val
465             470             475             480

Leu Gln Phe Leu Ser Leu Val His Arg Thr Tyr Pro Gln Asp Pro Ala
            485             490             495

Trp Arg Ala Pro Glu Phe Leu Gln Thr Leu Ala Ile Ala Ala Phe Pro
        500             505             510

Leu Gly Ala Gln Lys Gly Val Gly Ala Glu Ser Thr Arg Asn Thr Ser
        515             520             525

Ser Pro Glu Ala Ala Ala Glu Gly Asp Ser Thr Val Glu Gly Leu Gln
    530             535             540

Ala Pro Thr Lys Ala His Pro Ala Arg Arg Lys Leu Arg Glu Phe Thr
545             550             555             560

Gln Leu Leu Leu Arg Glu Leu Leu Leu Gly Ala Ser Ser Pro Lys Gln
            565             570             575
```

23

```
Trp Leu Pro Leu Glu Val Leu Leu Glu Ala Ser Pro Asp His Ala Thr
            580                 585             590

Ser Gln Gln Lys Arg Asp Phe Gln Ser Glu Val Leu Leu Ser Ala Met
        595                 600             605

Glu Leu Phe His Met Thr Ser Gly Gly Asp Ala Ala Met Phe Arg Asp
    610                 615             620

Gly Lys Glu Pro Gln Pro Ser Ala Glu Ala Ala Ala Ala Pro Ser Leu
625                 630             635                 640

Ala Asn Ile Ser Cys Phe Thr Gln Lys Leu Val Glu Lys Leu Tyr Ser
            645                 650             655

Gly Met Phe Ser Ala Asp Pro Arg His Ile Leu Leu Phe Ile Leu Glu
        660                 665             670

His Ile Met Val Val Ile Glu Thr Ala Ser Ser Gln Arg Asp Thr Val
    675                 680             685

Leu Ser Thr Leu Tyr Ser Ser Leu Asn Lys Val Ile Leu Tyr Cys Leu
    690                 695             700

Ser Lys Pro Gln Gln Ser Leu Ser Glu Cys Leu Gly Leu Leu Ser Ile
705                 710             715                 720

Leu Gly Phe Leu Gln Glu His Trp Asp Val Val Phe Ala Thr Tyr Asn
            725                 730             735

Ser Asn Ile Ser Phe Leu Leu Cys Leu Met His Cys Leu Leu Leu Leu
            740                 745             750

Asn Glu Arg Ser Tyr Pro Glu Gly Phe Gly Leu Glu Pro Lys Pro Arg
        755                 760             765

Met Ser Thr Tyr His Gln Val Phe Leu Ser Pro Asn Glu Asp Val Lys
    770                 775             780

Glu Lys Arg Glu Asp Leu Pro Ser Leu Ser Asp Val Gln His Asn Ile
785                 790             795                 800

Gln Lys Thr Val Gln Thr Leu Trp Gln Gln Leu Val Ala Gln Arg Gln
            805                 810             815

Gln Thr Leu Glu Asp Ala Phe Lys Ile Asp Leu Ser Val Lys Pro Gly
        820                 825             830

Glu Arg Glu Val Lys Ile Glu Glu Val Thr Pro Leu Trp Glu Glu Thr
        835                 840             845

Met Leu Lys Ala Trp Gln His Tyr Leu Ala Ser Glu Lys Lys Ser Leu
    850                 855             860

Ala Ser Arg Ser Asn Val Ala His His Ser Lys Val Thr Leu Trp Ser
865                 870             875                 880

Gly Ser Leu Ser Ser Ala Met Lys Leu Met Pro Gly Arg Gln Ala Lys
            885                 890             895
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24

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Asp Pro Glu Cys Lys Thr Glu Asp Phe Val Ser Cys Ile Glu Asn Tyr
        900                     905                     910

Arg Arg Arg Gly Gln Glu Leu Tyr Ala Ser Leu Tyr Lys Asp His Val
        915                     920                     925

Gln Arg Arg Lys Cys Gly Asn Ile Lys Ala Ala Asn Ala Trp Ala Arg
    930                     935                     940

Ile Gln Glu Gln Leu Phe Gly Glu Leu Gly Leu Trp Ser Gln Gly Glu
945                     950                     955                 960

Glu Thr Lys Pro Cys Ser Pro Trp Glu Leu Asp Trp Arg Glu Gly Pro
                965                     970                     975

Ala Arg Met Arg Lys Arg Ile Lys Arg Leu Ser Pro Leu Glu Ala Leu
            980                     985                     990

Ser Ser Gly Arg His Lys Glu Ser Gln Asp Lys Asn Asp His Ile Ser
        995                     1000                    1005

Gln Thr Asn Ala Glu Asn Gln Asp Glu Leu Thr Leu Arg Glu Ala Glu
    1010                    1015                    1020

Gly Glu Pro Asp Glu Val Gly Val Asp Cys Thr Gln Leu Thr Phe Phe
1025                    1030                    1035                1040

Pro Ala Leu His Glu Ser Leu His Ser Glu Asp Phe Leu Glu Leu Cys
            1045                    1050                    1055

Arg Glu Arg Gln Val Ile Leu Gln Glu Leu Leu Asp Lys Glu Lys Val
        1060                    1065                    1070

Thr Gln Lys Phe Ser Leu Val Ile Val Gln Gly His Leu Val Ser Glu
        1075                    1080                    1085

Gly Val Leu Leu Phe Gly His Gln His Phe Tyr Ile Cys Glu Asn Phe
    1090                    1095                    1100

Thr Leu Ser Pro Thr Gly Asp Val Tyr Cys Thr Arg His Cys Leu Ser
1105                    1110                    1115                1120

Asn Ile Ser Asp Pro Phe Ile Phe Asn Leu Cys Ser Lys Asp Arg Ser
            1125                    1130                    1135

Thr Asp His Tyr Ser Cys Gln Cys His Ser Tyr Ala Asp Met Arg Glu
        1140                    1145                    1150

Leu Arg Gln Ala Arg Phe Leu Leu Gln Asp Ile Ala Leu Glu Ile Phe
        1155                    1160                    1165

Phe His Asn Gly Tyr Ser Lys Phe Leu Val Phe Tyr Asn Asn Asp Arg
    1170                    1175                    1180

Ser Lys Ala Phe Lys Ser Phe Cys Ser Phe Gln Pro Ser Leu Lys Gly
1185                    1190                    1195                1200

Lys Ala Thr Ser Glu Asp Thr Leu Asn Leu Arg Arg Tyr Pro Gly Ser
            1205                    1210                    1215
```

```
Asp Arg Ile Met Leu Gln Lys Trp Gln Lys Arg Asp Ile Ser Asn Phe
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Glu Tyr Leu Met Tyr Leu Asn Thr Ala Ala Gly Arg Thr Cys Asn Asp
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Tyr Met Gln Tyr Pro Val Phe Pro Trp Val Leu Ala Asp Tyr Thr Ser
    1250                1255                1260

Glu Thr Leu Asn Leu Ala Asn Pro Lys Ile Phe Arg Asp Leu Ser Lys
1265                1270                1275                1280

Pro Met Gly Ala Gln Thr Lys Glu Arg Lys Leu Lys Phe Ile Gln Arg
            1285                1290                1295

Phe Lys Glu Val Glu Lys Thr Glu Gly Asp Met Thr Val Gln Cys His
            1300                1305                1310

Tyr Tyr Thr His Tyr Ser Ser Ala Ile Ile Val Ala Ser Tyr Leu Val
            1315                1320                1325

Arg Met Pro Pro Phe Thr Gln Ala Phe Cys Ala Leu Gln Gly Gly Ser
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Phe Asp Val Ala Asp Arg Met Phe His Ser Val Lys Ser Thr Trp Glu
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Ser Ala Ser Arg Glu Asn Met Ser Asp Val Arg Glu Leu Thr Pro Glu
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Phe Phe Tyr Leu Pro Glu Phe Leu Thr Asn Cys Asn Gly Val Glu Phe
            1380                1385                1390

Gly Cys Met Gln Asp Gly Thr Val Leu Gly Asp Val Gln Leu Pro Pro
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Trp Ala Asp Gly Asp Pro Arg Lys Phe Ile Ser Leu His Arg Lys Ala
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Leu Glu Ser Asp Phe Val Ser Ala Asn Leu His His Trp Ile Asp Leu
1425                1430                1435                1440

Ile Phe Gly Tyr Lys Gln Gln Gly Pro Ala Ala Val Asp Ala Val Asn
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Ile Phe His Pro Tyr Phe Tyr Gly Asp Arg Met Asp Leu Ser Ser Ile
            1460                1465                1470

Thr Asp Pro Leu Ile Lys Ser Thr Ile Leu Gly Phe Val Ser Asn Phe
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Gly Gln Val Pro Lys Gln Leu Phe Thr Lys Pro His Pro Ala Arg Thr
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Ala Ala Gly Lys Pro Leu Pro Gly Lys Asp Val Ser Thr Pro Val Ser
1505                1510                1515                1520

Leu Pro Gly His Pro Gln Pro Phe Phe Tyr Ser Leu Gln Ser Leu Arg
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Pro Ser Gln Val Thr Val Lys Asp Met Tyr Leu Phe Ser Leu Gly Ser
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Glu Ser Pro Lys Gly Ala Ile Gly His Ile Val Ser Thr Glu Lys Thr
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Ile Leu Ala Val Glu Arg Asn Lys Val Leu Leu Pro Pro Leu Trp Asn
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Arg Thr Phe Ser Trp Gly Phe Asp Asp Phe Ser Cys Cys Leu Gly Ser
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Tyr Gly Ser Asp Lys Ser
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<213> Homo sapiens

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Thr Thr Gln Ser Leu Lys Gln Leu Glu Glu Arg Ala Ala Arg Asn Val
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Ser Gln Val Ser Lys Asn Leu Glu Ser His His Gly Asp Gln Met Ala
65                  70                  75                  80

Gln Lys Ser Gln Ser Thr Gln Ile Ser Gln Glu Leu Glu Glu Leu Arg
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Ala Glu Gln Gln Arg Leu Lys Ser Gln Asp Leu Glu Leu Ser Trp Asn
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Leu Asn Gly Leu Gln Ala Asp Leu Ser Ser Phe Lys Ser Gln Glu Leu
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Asn Glu Arg Asn Glu Ala Ser Asp Leu Leu Glu Arg Leu Arg Glu Glu
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Val Thr Lys Leu Arg Met Glu Leu Gln Val Ser Ser Gly Phe Val Cys
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Asn Thr Cys Pro Glu Lys Trp Ile Asn Phe Gln Arg Lys Cys Tyr Tyr
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Phe Gly Lys Gly Thr Lys Gln Trp Val His Ala Arg Tyr Ala Cys Asp
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Asp Met Glu Gly Gln Leu Val Ser Ile His Ser Pro Glu Glu Gln Asp
            195                 200                 205

Phe Leu Thr Lys His Ala Ser His Thr Gly Ser Trp Ile Gly Leu Arg
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Asn Leu Asp Leu Lys Gly Glu Phe Ile Trp Val Asp Gly Ser His Val
225                 230                 235                 240

Asp Tyr Ser Asn Trp Ala Pro Gly Glu Pro Thr Ser Arg Ser Gln Gly
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28

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Cys Asp Arg Lys Leu Gly Ala Trp Val Cys Asp Arg Leu Ala Thr Cys
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Arg Pro Asp Pro Asp Gly Arg Leu Pro Thr Pro Ser Ala Pro Leu His
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29

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<212> DNA
<213> Homo sapiens

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31

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<211> 568
<212> PRT
<213> Homo sapiens

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Ser Pro Pro Val Ser Asp Thr Pro Asp Glu Gly Asp Glu Pro Met Pro
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32

Val Pro Glu Asp Leu Ser Thr Thr Ser Gly Ala Gln Gln Asn Ser Lys
        35   40   45

Ser Asp Arg Gly Met Ala Ser Asn Val Lys Val Glu Thr Gln Ser Asp
        50   55   60

Glu Glu Asn Gly Arg Ala Cys Glu Met Asn Gly Glu Glu Cys Ala Glu
65   70   75   80

Asp Leu Arg Met Leu Asp Ala Ser Gly Glu Lys Met Asn Gly Ser His
                85   90   95

Arg Asp Gln Gly Ser Ser Ala Leu Ser Gly Val Gly Gly Ile Arg Leu
            100   105   110

Pro Asn Gly Lys Leu Lys Cys Asp Ile Cys Gly Ile Val Cys Ile Gly
        115   120   125

Pro Asn Val Leu Met Val His Lys Arg Ser His Thr Gly Glu Arg Pro
        130   135   140

Phe Gln Cys Asn Gln Cys Ser Ser Ala Leu Ser Gly Val Gly Gly Ile
145   150   155   160

Arg Leu Pro Asn Gly Lys Leu Lys Cys Asp Ile Cys Gly Ile Val Cys
                165   170   175

Ile Gly Pro Asn Val Leu Met Val His Lys Arg Ser His Thr Gly Glu
            180   185   190

Arg Pro Phe Gln Cys Asn Gln Cys Gly Ala Ser Phe Thr Gln Lys Gly
        195   200   205

Asn Leu Leu Arg His Ile Lys Leu His Ser Gly Glu Lys Pro Phe Lys
    210   215   220

Cys His Leu Cys Asn Tyr Ala Cys Arg Arg Arg Asp Ala Leu Thr Gly
225   230   235   240

His Leu Arg Thr His Ser Val Gly Lys Pro His Lys Cys Gly Tyr Cys
                245   250   255

Gly Arg Ser Tyr Lys Gln Arg Ser Ser Leu Glu Glu His Lys Glu Arg
            260   265   270

Cys His Asn Tyr Leu Glu Ser Met Gly Leu Pro Gly Met Tyr Pro Val
            275   280   285

Ile Lys Glu Glu Thr Asn His Asn Glu Met Ala Glu Asp Leu Cys Lys
        290   295   300

Ile Gly Ala Glu Arg Ser Leu Val Leu Asp Arg Leu Ala Ser Asn Val
305   310   315   320

Ala Lys Arg Lys Ser Ser Met Pro Gln Lys Phe Leu Gly Asp Lys Cys
            325   330   335

Leu Ser Asp Met Pro Tyr Asp Ser Ala Asn Tyr Glu Lys Glu Asp Met
            340   345   350

33

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Met Thr Ser His Val Met Asp Gln Ala Ile Asn Asn Ala Ile Asn Tyr
        355                 360             365
Leu Gly Ala Glu Ser Leu Arg Pro Leu Val Gln Thr Pro Pro Gly Ser
        370             375             380
Ser Glu Val Val Pro Val Ile Ser Ser Met Tyr Gln Leu His Lys Pro
385                 390             395                 400
Pro Ser Asp Gly Pro Pro Arg Ser Asn His Ser Ala Gln Asp Ala Val
                405             410             415
Asp Asn Leu Leu Leu Leu Ser Lys Ala Lys Ser Val Ser Ser Glu Arg
            420             425             430
Glu Ala Ser Pro Ser Asn Ser Cys Gln Asp Ser Thr Asp Thr Glu Ser
        435             440             445
Asn Ala Glu Glu Gln Arg Ser Gly Leu Ile Tyr Leu Thr Asn His Ile
    450             455             460
Asn Pro His Ala Arg Asn Gly Leu Ala Leu Lys Glu Glu Gln Arg Ala
465             470             475             480
Tyr Glu Val Leu Arg Ala Ala Ser Glu Asn Ser Gln Asp Ala Phe Arg
            485             490             495
Val Val Ser Thr Ser Gly Glu Gln Leu Lys Val Tyr Lys Cys Glu His
        500             505             510
Cys Arg Val Leu Phe Leu Asp His Val Met Tyr Thr Ile His Met Gly
        515             520             525
Cys His Gly Cys His Gly Phe Arg Asp Pro Phe Glu Cys Asn Met Cys
    530             535             540
Gly Tyr His Ser Gln Asp Arg Tyr Glu Phe Ser Ser His Ile Thr Arg
545             550             555             560
Gly Glu His Arg Tyr His Leu Ser
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<210> 27
<211> 350
<212> DNA
<213> Homo sapiens

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gagagagttc ctgtacaccc ttcacccagc ttcctctact gctaacatct tacataatca 240
tagtttcaac ctgagaaatt agcatggggt acagtcctat taatgaaacc ccaggcttta 300
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<210> 28
<211> 850
<212> DNA
<213> Homo sapiens
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34

<400> 28
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gcgcttattt ttcttaatca tgtttctgac aatcatagtg tgtggaatgg ttgctgcttt 180
aagcgcaata agagctaact gccatcaaga gccatcagta tgtcttcaag ctgcatgccc 240
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<210> 29
<211> 191
<212> PRT
<213> Homo sapiens

<400> 29
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Met His Asp Ser Asn Asn Val Glu Lys Asp Ile Thr Pro Ser Glu Leu
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Pro Ala Asn Pro Gly Cys Leu His Ser Lys Glu His Ser Ile Lys Ala
            20                  25                  30

Thr Leu Ile Trp Arg Leu Phe Phe Leu Ile Met Phe Leu Thr Ile Ile
         35                  40                  45

Val Cys Gly Met Val Ala Ala Leu Ser Ala Ile Arg Ala Asn Cys His
     50                  55                  60

Gln Glu Pro Ser Val Cys Leu Gln Ala Ala Cys Pro Glu Ser Trp Ile
 65                  70                  75                  80

Gly Phe Gln Arg Lys Cys Phe Tyr Phe Ser Asp Asp Thr Lys Asn Trp
                 85                  90                  95

Thr Ser Ser Gln Arg Phe Cys Asp Ser Gln Asp Ala Asp Leu Ala Gln
             100                 105                 110

Val Glu Ser Phe Gln Glu Leu Asn Phe Leu Leu Arg Tyr Lys Gly Pro
         115                 120                 125

Ser Asp His Trp Ile Gly Leu Ser Arg Glu Gln Gly Gln Pro Trp Lys
     130                 135                 140

Trp Ile Asn Gly Thr Glu Trp Thr Arg Gln Phe Pro Ile Leu Gly Ala
145                 150                 155                 160

Gly Glu Cys Ala Tyr Leu Asn Asp Lys Gly Ala Ser Ser Ala Arg His
                 165                 170                 175

Tyr Thr Glu Arg Lys Trp Ile Cys Ser Lys Ser Asp Ile His Val
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35

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<211> 558
<212> DNA
<213> Homo sapiens

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<211> 2088
<212> DNA
<213> Homo sapiens

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<210> 32
<211> 334
<212> PRT
<213> Homo sapiens

<400> 32

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Thr Pro Pro Pro Gly Gly Lys Asp Arg Glu Ala Phe Glu Ala Glu Tyr
            20                  25                  30

Arg Leu Gly Pro Leu Leu Gly Lys Gly Gly Phe Gly Thr Val Phe Ala
        35                  40                  45

Gly His Arg Leu Thr Asp Arg Leu Gln Val Ala Ile Lys Val Ile Pro
    50                  55                  60

Arg Asn Arg Val Leu Gly Trp Ser Pro Leu Ser Asp Ser Val Thr Cys
65                  70                  75                  80

Pro Leu Glu Val Ala Leu Leu Trp Lys Val Gly Ala Gly Gly Gly His
                85                  90                  95

Pro Gly Val Ile Arg Leu Leu Asp Trp Phe Glu Thr Gln Glu Gly Phe
            100                 105                 110

Met Leu Val Leu Glu Arg Pro Leu Pro Ala Gln Asp Leu Phe Asp Tyr
        115                 120                 125

Ile Thr Glu Lys Gly Pro Leu Gly Glu Gly Pro Ser Arg Cys Phe Phe
    130                 135                 140

Gly Gln Val Val Ala Ala Ile Gln His Cys His Ser Arg Gly Val Val
145                 150                 155                 160

His Arg Asp Ile Lys Asp Glu Asn Ile Leu Ile Asp Leu Arg Arg Gly
                165                 170                 175

Cys Ala Lys Leu Ile Asp Phe Gly Ser Gly Ala Leu Leu His Asp Glu
            180                 185                 190

Pro Tyr Thr Asp Phe Asp Gly Thr Arg Val Tyr Ser Pro Pro Glu Trp
        195                 200                 205

Ile Ser Arg His Gln Tyr His Ala Leu Pro Ala Thr Val Trp Ser Leu
    210                 215                 220

Gly Ile Leu Leu Tyr Asp Met Val Cys Gly Asp Ile Pro Phe Glu Arg
225                 230                 235                 240

Asp Gln Glu Ile Leu Glu Ala Glu Leu His Phe Pro Ala His Val Ser
                245                 250                 255

Pro Asp Cys Cys Ala Leu Ile Arg Arg Cys Leu Ala Pro Lys Pro Ser
            260                 265                 270
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Ser Arg Pro Ser Leu Glu Glu Ile Leu Leu Asp Pro Trp Met Gln Thr
        275   280   285

Pro Ala Glu Asp Val Thr Pro Gln Pro Leu Gln Arg Arg Pro Cys Pro
        290   295   300

Phe Gly Leu Val Leu Ala Thr Leu Ser Leu Ala Trp Pro Gly Leu Ala
305   310   315   320

Pro Asn Gly Gln Lys Ser His Pro Met Ala Met Ser Gln Gly
                325   330

<210> 33
<211> 1215
<212> DNA
<213> Homo sapiens

<400> 33
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<210> 34
<211> 3144
<212> DNA
<213> Homo sapiens   –

<400> 34
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38

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tgtacttcat aataattttt tatccatttt catcttcttt atctttatat tctgtaacat 3060
gaaacttacc taatcttcaa atgttagctt cattttttac ctttgaaata cttaatcttt 3120
ctgaataaat ataatggtct ataa                                        3144
```

<210> 35
<211> 755
<212> PRT
<213> Homo sapiens

<400> 35

```
Met Ser Glu Asn Ser Ser Asp Ser Asp Ser Ser Cys Gly Trp Thr Val
  1               5                  10                  15

Ile Ser His Glu Gly Ser Asp Ile Glu Met Leu Asn Ser Val Thr Pro
              20                  25                  30

Thr Asp Ser Cys Glu Pro Ala Pro Glu Cys Ser Ser Leu Glu Gln Glu
          35                  40                  45

Glu Leu Gln Ala Leu Gln Ile Glu Gln Gly Glu Ser Ser Gln Asn Gly
      50                  55                  60
```

39

```
Thr Val Leu Met Glu Glu Thr Ala Tyr Pro Ala Leu Glu Glu Thr Ser
 65              70              75              80

Ser Thr Ile Glu Ala Glu Glu Gln Lys Ile Pro Glu Asp Ser Ile Tyr
             85              90              95

Ile Gly Thr Ala Ser Asp Asp Ser Asp Ile Val Thr Leu Glu Pro Pro
            100             105             110

Lys Leu Glu Glu Ile Gly Asn Gln Glu Val Val Ile Val Glu Glu Ala
        115             120             125

Gln Ser Ser Glu Asp Phe Asn Met Gly Ser Ser Ser Ser Ser Gln Tyr
    130             135             140

Thr Phe Cys Gln Pro Glu Thr Val Phe Ser Ser Gln Pro Ser Asp Asp
145             150             155             160

Glu Ser Ser Ser Asp Glu Thr Ser Asn Gln Pro Ser Pro Ala Phe Arg
            165             170             175

Arg Arg Arg Ala Arg Lys Lys Thr Val Ser Ala Ser Glu Ser Glu Asp
        180             185             190

Arg Leu Val Ala Glu Gln Glu Thr Glu Pro Ser Lys Glu Leu Ser Lys
        195             200             205

Arg Gln Phe Ser Ser Gly Leu Asn Lys Cys Val Ile Leu Ala Leu Val
    210             215             220

Ile Ala Ile Ser Met Gly Phe Gly His Phe Tyr Gly Thr Ile Gln Ile
225             230         ˷      235             240

Gln Lys Arg Gln Gln Leu Val Arg Lys Ile His Glu Asp Glu Leu Asn
            245             250             255

Asp Met Lys Asp Tyr Leu Ser Gln Cys Gln Gln Glu Gln Glu Ser Phe
            260             265             270

Ile Asp Tyr Lys Ser Leu Lys Glu Asn Leu Ala Arg Cys Trp Thr Leu
        275             280             285

Thr Glu Ala Glu Lys Met Ser Phe Glu Thr Gln Lys Thr Asn Leu Ala
    290             295             300

Thr Glu Asn Gln Tyr Leu Arg Val Ser Leu Glu Lys Glu Glu Lys Ala
305             310             315             320

Leu Ser Ser Leu Gln Glu Glu Leu Asn Lys Leu Arg Glu Gln Ile Arg
            325             330             335

Ile Leu Glu Asp Lys Gly Thr Ser Thr Glu Leu Val Lys Glu Asn Gln
            340             345            ˙350

Lys Leu Lys Gln His Leu Glu Glu Glu Lys Gln Lys Lys His Ser Phe
        355             360             365

Leu Ser Gln Arg Glu Thr Leu Leu Thr Glu Ala Lys Met Leu Lys Arg
    370             375             380


                                40
```

Glu Leu Glu Arg Glu Arg Leu Val Thr Thr Ala Leu Arg Gly Glu Leu
385   390   395   400

Gln Gln Leu Ser Gly Ser Gln Leu His Gly Lys Ser Asp Ser Pro Asn
            405   410   415

Val Tyr Thr Glu Lys Lys Glu Ile Ala Ile Leu Arg Glu Arg Leu Thr
            420   425   430

Glu Leu Glu Arg Lys Leu Thr Phe Glu Gln Gln Arg Ser Asp Leu Trp
        435   440   445

Glu Arg Leu Tyr Val Glu Ala Lys Asp Gln Asn Gly Lys Gln Gly Thr
    450   455   460

Asp Gly Lys Lys Lys Gly Gly Arg Gly Ser His Arg Ala Lys Asn Lys
465   470   475   480

Ser Lys Glu Thr Phe Leu Gly Ser Val Lys Glu Thr Phe Asp Ala Met
            485   490   495

Lys Asn Ser Thr Lys Glu Phe Val Arg His His Lys Glu Lys Ile Lys
        500   505   510

Gln Ala Lys Glu Ala Val Lys Glu Asn Leu Lys Lys Phe Ser Asp Ser
    515   520   525

Val Lys Ser Thr Phe Arg His Phe Lys Asp Thr Thr Lys Asn Ile Phe
    530   535   540

Asp Glu Lys Gly Asn Lys Arg Phe Gly Ala Thr Lys Glu Ala Ala Glu
545   550   555   560

Lys Pro Arg Thr Val Phe Ser Asp Tyr Leu His Pro Gln Tyr Lys Ala
            565   570   575

Pro Thr Glu Asn His Ser Arg Pro Tyr Tyr Ala Lys Arg Trp Lys Glu
        580   585   590

Glu Lys Pro Val His Phe Lys Glu Phe Arg Lys Asn Thr Asn Ser Lys
    595   600   605

Lys Cys Ser Pro Gly His Asp Cys Arg Glu Asn Ser His Ser Phe Arg
    610   615   620

Lys Ala Cys Ser Gly Val Phe Asp Cys Ala Gln Gln Glu Ser Met Ser
625   630   635   640

Leu Phe Asn Thr Val Val Ile Pro Ile Arg Met Asp Glu Phe Arg Gln
            645   650   655

Ile Ile Gln Arg Tyr Met Leu Lys Glu Leu Asp Thr Phe Cys Arg Trp
        660   665   670

Asn Glu Leu Asp Gln Phe Ile Asn Lys Phe Phe Leu Asn Gly Val Phe
        675   680   685

Ile His Asp Gln Lys Leu Phe Thr Asp Phe Val Asn Asp Val Lys Ile
    690   695   700

41

```
Ile Leu Gly Asn Met Lys Glu Tyr Glu Val Asp Asn Asp Gly Val Phe
705             710             715             720

Glu Lys Leu Asp Glu Tyr Ile Tyr Arg His Phe Phe Gly His Thr Phe
                725             730             735

Ser Pro Pro Tyr Gly Pro Arg Ser Val Tyr Ile Lys Pro Cys His Tyr
                740             745             750

Ser Ser Leu
        755


<210> 36
<211> 558
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (1)..(558)
<223> n = g, a, c or t

<400> 36
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caaggaccag gccaaagggg cagggcctcc tttggagggg ttgaggggta catcctcggc  120
tggtgtttgc atccaggggt ccagcaggat ctcttccagt gagggtcggg aagaaggttt  180
gggggccagg caccggcgga ttagggcaca gcaatcttgg ggaaaacatg ggcttgggaa  240
gtggagctca gcttccagaa tctcctggtc cctctcaaag ggaatgtccc cacacaccat  300
gtcatagagg aggatgccca gtgaccagac agtggccggg agtgcatggt actggtgtcg  360
agagatccac tctggggggc tgtacaccct tgtcccatca aagtcagtgt agggttcatc  420
atgaagcagg gcaccagaac caaaatcaat gagtttggca cagccacggc gtaggtctat  480
caggatgntc tcatccttga tgtcacgatg gacaactnca cgggaaatgg cagtgctgga  540
tggctgccac tactttgg                                                558


<210> 37
<211> 86
<212> PRT
<213> Homo sapiens

<220>
<221> MOD_RES
<222> (1)..(86)
<223> Xaa = any amino acid

<400> 37
Gln Val Val Ala Xaa Ile Gln His Cys His Ser Arg Gly Val Val His
  1             5               10              15

Arg Asp Ile Lys Asp Glu Asn Ile Leu Ile Asp Leu Arg Arg Gly Cys
                20              25              30

Ala Lys Leu Ile Asp Phe Gly Ser Gly Ala Leu Leu His Asp Glu Pro
            35              40              45

Tyr Thr Asp Phe Asp Gly Thr Arg Val Tyr Ser Pro Pro Glu Trp Ile
    50              55              60
```

```
Ser Arg His Gln Tyr His Ala Leu Pro Ala Thr Val Trp Ser Leu Gly
 65                 70                 75                 80

Ile Xaa Leu Tyr Asp Met
                85


<210> 38
<211> 584
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (1)..(584)
<223> n = g, a, c or t

<400> 38
aaataatcca ggcaggagaa gagaggaggg cacacttgga actcccctcc ccacaatacg 60
tgattattta cattttagta attggacaat cccggctcag gaggaggttg caagaatctg 120
caaaagttgg agggagcgcc ccaggagaac aaacagcaag ccttatttcc cctagcccat 180
cccccaaaaa accatccatc ccatcctagt gtctggtggt gtccggtggt gtccatcttc 240
cattccttcc caaattatgg aagtaaggtt cttctcacca gaataagagc acttgggata 300
acagagtagg gtcccctcac ccaaaaaaaa aaaaaaaan gaagccttgg ggtaacaaca 360
gggcattacc tcccccagaa taaagaatcc tgggctgagg caggtaagca gcttgaccca 420
atatgggacc ctaggctagg ggaaagggtc cctttactaa aataaaagct actggggtat 480
tggaaggaaa gcacccttgc ccaagtaaga gcatatgaac taagtttgng tggnggtagt 540
aggaggngcc aatgtggggt gacacatcat cagaataaga gtcc              584


<210> 39
<211> 2052
<212> DNA
<213> Homo sapiens

<400> 39
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tgctttccac cctggcgccc cccagccctg gctccccagc tgcgctgccc cgggcgtcca 120
cgccctgcgg gcttagcggg ttcagtgggc tcaatctgcg cagcgccacc tccatgttga 180
ccaagcctct acaggggcct cccgcgcccc ccgggacccc cacgccgccg ccaggaggca 240
aggatcggga agcgttcgag gccgagtatc gactcggccc cctcctgggt aagggggggct 300
ttggcaccgt cttcgcagga caccgcctca cagatcgact ccaggtggcc atcaaagtga 360
ttccccggaa tcgtgtgctg ggctggtccc ccttgtcaga ctcagtcaca tgcccactcg 420
aagtcgcact gctatggaaa gtgggtgcag gtggtgggca ccctggcgtg atccgcctgc 480
ttgactggtt tgagacacag gagggcttca tgctggtcct cgagcggcct ttgcccgccc 540
aggatctctt tgactatatc acagagaagg cccactggg tgaaggccca agccgctgct 600
tctttggcca agtagtggca gccatccagc actgccattc ccgtggagtt gtccatcgtg 660
acatcaagga tgagaacatc ctgatagacc tacgccgtgg ctgtgccaaa ctcattgatt 720
ttggttctgg tgccctgctt catgatgaac cctacactga ctttgatggg acaagggtgt 780
acagccccc agagtggatc tctcgacacc agtaccatgc actcccggcc actgtctggt 840
cactgggcat cctcctctat gacatggtgt gtggggacat tccctttgag agggaccagg 900
agattctgga agctgagctc cacttcccag cccatgtctc cccagactgc tgtgccctaa 960
tccgccggtg cctggccccc aaaccttctt cccgaccctc actggaagag atcctgctgg 1020
accctggat gcaaacacca gccgaggatg taccctcaa cccctccaaa ggaggccctg 1080
ccctttggc ctggtccttg ctaccctaag cctggcctgg cctggcctgg cccccaatgg 1140
tcagaagagc catcccatgg ccatgtcaca gggatagatg gacatttgtt gacttggttt 1200
tacaggtcat taccagtcat taaagtccag tattactaag gtaagggatt gaggatcagg 1260
ggttagaaga cataaaccaa gtctgcccag ttcccttccc aatcctacaa aggagccttc 1320
ctcccagaac ctgtggtccc tgattctgga gggggaactt cttgcttctc attttgctaa 1380
ggaagtttat tttggtgaag ttgttcccat tctgagcccc gggactctta ttctgatgat 1440
gtgtcacccc acattggcac ctcctactac caccacacaa acttagttca tatgctctta 1500
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cttgggcaag ggtgctttcc ttccaatacc ccagtagctt ttattttagt aaagggaccc 1560
tttcccctag cctagggtcc catattgggt caagctgctt acctgcctca gcccaggatt 1620
ctttattctg ggggaggtaa tgccctgttg ttaccccaag gcttcttttt tttttttttt 1680
tgggtgaggg gaccctactc tgttatccca agtgctctta ttctggtgag aagaacctta 1740
cttccataat ttgggaagga atggaagatg gacaccaccg gacaccacca gacactagga 1800
tgggatggat ggttttttgg gggatgggct aggggaaata aggcttgctg tttgttctcc 1860
tggggcgctc cctccaactt ttgcagattc ttgcaacctc ctcctgagcc gggattgtcc 1920
aattactaaa atgtaaataa tcacgtattg tggggagggg agttccaagt gtgccctcct 1980
ctcttctcct gcctggatta tttaaaaagc catgtgtgga aacccactat ttaataaaag 2040
taatagaatc ag                                                      2052
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<210> 40
<211> 311
<212> PRT
<213> Homo sapiens

<400> 40

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Met Leu Thr Lys Pro Leu Gln Gly Pro Pro Ala Pro Pro Gly Thr Pro
 1               5                  10                  15

Thr Pro Pro Pro Gly Gly Lys Asp Arg Glu Ala Phe Glu Ala Glu Tyr
                20                  25                  30

Arg Leu Gly Pro Leu Leu Gly Lys Gly Gly Phe Gly Thr Val Phe Ala
            35                  40                  45

Gly His Arg Leu Thr Asp Arg Leu Gln Val Ala Ile Lys Val Ile Pro
        50                  55                  60

Arg Asn Arg Val Leu Gly Trp Ser Pro Leu Ser Asp Ser Val Thr Cys
65                  70                 ·75                      80

Pro Leu Glu Val Ala Leu Leu Trp Lys Val Gly Ala Gly Gly Gly His
                85                  90                  95

Pro Gly Val Ile Arg Leu Leu Asp Trp Phe Glu Thr Gln Glu Gly Phe
               100                 105                .110

Met Leu Val Leu Glu Arg Pro Leu Pro Ala Gln Asp Leu Phe Asp Tyr
           115                 120                 125

Ile Thr Glu Lys Gly Pro Leu Gly Glu Gly Pro Ser Arg Cys Phe Phe
       130                 135                 140

Gly Gln Val Val Ala Ala Ile Gln His Cys His Ser Arg Gly Val Val
145                 150                 155                 160

His Arg Asp Ile Lys Asp Glu Asn Ile Leu Ile Asp Leu Arg Arg Gly
               165                 170                 175

Cys Ala Lys Leu Ile Asp Phe Gly Ser Gly Ala Leu Leu His Asp Glu
           180                 185                 190

Pro Tyr Thr Asp Phe Asp Gly Thr Arg Val Tyr Ser Pro Pro Glu Trp
           195                 200                 205

Ile Ser Arg His Gln Tyr His Ala Leu Pro Ala Thr Val Trp Ser Leu
       210                 215                 220
```

44

```
Gly Ile Leu Leu Tyr Asp Met Val Cys Gly Asp Ile Pro Phe Glu Arg
225             230             235             240

Asp Gln Glu Ile Leu Glu Ala Glu Leu His Phe Pro Ala His Val Ser
            245             250             255

Pro Asp Cys Cys Ala Leu Ile Arg Arg Cys Leu Ala Pro Lys Pro Ser
            260             265             270

Ser·Arg Pro Ser Leu Glu Glu Ile Leu Leu Asp Pro Trp Met Gln Thr
            275             280             285

Pro Ala Glu Asp Val Pro Leu Asn Pro Ser Lys Gly Gly Pro Ala Pro
        290             295             300

Leu Ala Trp Ser Leu Leu Pro
305             310
```

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<210> 41
<211> 105
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (1)..(105)
<223> n = g, a, c or t

<400> 41
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cttttggatg gttttctcta cnacntcccg caagcttccn tccag              105


<210> 42
<211> 1125
<212> DNA
<213> Homo sapiens

<400> 42
gtctcccca  ctgtcagcac ctcttctgtg tggtgagtgg accgcttacc ccactaggtg   60
aagatgtcag cccaggagag ctgcctcagc ctcatcaagt acttcctctt cgttttcaac  120
ctcttcttct tcgtcctcgg cagcctgatc ttctgcttcg gcatctggat cctcatcgac  180
aagaccagct tcgtgtcctt tgtgggcttg gccttcgtgc ctctgcagat ctggtccaaa  240
gtcctggcca tctcaggaat cttcaccatg ggcatcgccc tcctgggttg tgtggggggcc  300
ctcaaggagc tccgctgcct cctgggcctg tattttggga tgctgctgct cctgtttgcc  360
acacagatca ccctgggaat cctcatctcc actcagcggg cccagctgga gcgaagcttg  420
cgggacgtcg tagagaaaac catccaaaag tacggcacca accccgagga gaccgcggcc  480
gaggagagct gggactatgt gcagttccag ctgcgctgct gcggctggca ctacccgcag  540
gactggttcc aagtcctcat cctgagaggt aacgggtcgg aggcgcaccg cgtgccctgc  600
tcctgctaca acttgtcggc gaccaacgac tccacaatcc tagataaggt gatcttgccc  660
cagctcagca ggcttggaca cctggcgcgg tccagacaca gtgcagacat ctgcgctgtc  720
cctgcagaga gccacatcta ccgcgagggc tgcgcgcagg gcctccagaa gtggctgcac  780
aacaacctta tttccatagt gggcatttgc ctgggcgtcg gcctactcga gctcgggttc  840
atgacgctct cgatattcct gtgcagaaac ctggaccacg tctacaaccg gctcgctcga  900
taccgttagg ccccgccctc cccaaagtcc cgccccgccc ccgtcacgtg cgctgggcac  960
ttccctgctg cctgtaaata tttgtttaat ccccagttcg cctggagccc tccgccttca 1020
cattcccctg gggacccacg tggctgcgtg ccctgctgc tgtcacctct cccacgggac 1080
ctggggcttt cgtccacagc ttcctgtccc catctgtcgg cctac             1125
```

45

<210> 43
<211> 281
<212> PRT
<213> Homo sapiens

<400> 43
Met Ser Ala Gln Glu Ser Cys Leu Ser Leu Ile Lys Tyr Phe Leu Phe
 1   5   10   15

Val Phe Asn Leu Phe Phe Phe Val Leu Gly Ser Leu Ile Phe Cys Phe
                20   25   30

Gly Ile Trp Ile Leu Ile Asp Lys Thr Ser Phe Val Ser Phe Val Gly
            35   40   45

Leu Ala Phe Val Pro Leu Gln Ile Trp Ser Lys Val Leu Ala Ile Ser
        50   55   60

Gly Ile Phe Thr Met Gly Ile Ala Leu Leu Gly Cys Val Gly Ala Leu
 65   70   75   80

Lys Glu Leu Arg Cys Leu Leu Gly Leu Tyr Phe Gly Met Leu Leu Leu
                85   90   95

Leu Phe Ala Thr Gln Ile Thr Leu Gly Ile Leu Ile Ser Thr Gln Arg
            100   105   110

Ala Gln Leu Glu Arg Ser Leu Arg Asp Val Val Glu Lys Thr Ile Gln
        115   120   125

Lys Tyr Gly Thr Asn Pro Glu Glu Thr Ala Ala Glu Glu Ser Trp Asp
    130   135   140

Tyr Val Gln Phe Gln Leu Arg Cys Cys Gly Trp His Tyr Pro Gln Asp
145   150   155   160

Trp Phe Gln Val Leu Ile Leu Arg Gly Asn Gly Ser Glu Ala His Arg
                165   170   175

Val Pro Cys Ser Cys Tyr Asn Leu Ser Ala Thr Asn Asp Ser Thr Ile
        180   185   190

Leu Asp Lys Val Ile Leu Pro Gln Leu Ser Arg Leu Gly His Leu Ala
        195   200   205

Arg Ser Arg His Ser Ala Asp Ile Cys Ala Val Pro Ala Glu Ser His
    210   215   220

Ile Tyr Arg Glu Gly Cys Ala Gln Gly Leu Gln Lys Trp Leu His Asn
225   230   235   240

Asn Leu Ile Ser Ile Val Gly Ile Cys Leu Gly Val Gly Leu Leu Glu
                245   250   255

Leu Gly Phe Met Thr Leu Ser Ile Phe Leu Cys Arg Asn Leu Asp His
            260   265   270

Val Tyr Asn Arg Leu Ala Arg Tyr Arg
    275   280

46

<210> 44
<211> 2915
<212> DNA
<213> Homo sapiens

<400> 44
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gccctgactg cgctgctgct gctgctgctg ggccatggcg gcggcgggcg ctggggcgcc 120
cgggcccagg aggcggcggc ggcggcggcg gacgggcccc ccgcggcaga cggcgaggac 180
ggacaggacc cgcacagcaa gcacctgtac acggccgaca tgttcacgca cgggatccag 240
agcgccgcgc acttcgtcat gttcttcgcg ccctggtgtg gacactgcca gcggctgcag 300
ccgacttgga atgacctggg agacaaatac aacagcatgg aagatgccaa agtctatgtg 360
gctaaagtgg actgcacggc ccactccgac gtgtgctccg cccaggggt gcgaggatac 420
cccaccttaa agcttttcaa gccaggccaa gaagctgtga agtaccaggg tcctcgggac 480
ttccagacac tggaaaactg gatgctgcag acactgaacg aggagccàgt gacaccagag 540
ccggaagtgg aaccgcccag tgcccccgag ctcaagcaag ggctgtatga gctctcagca 600
agcaactttg agctgcacgt tgcacaaggc gaccacttta tcaagttctt cgctccgtgg 660
tgtggtcact gcaaagccct ggctccaacc tgggagcagc tggctctggg ccttgaacat 720
tccgaaactg tcaagattgg caaggttgat tgtacacagc actatgaact ctgctccgga 780
aaccaggttc gtggctatcc cactcttctc tggttccgag atgggaaaaa ggtggatcag 840
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acagagactg gagcgacgga gaccgtcacg ccctcagagg ccccggtgct ggcagctgag 960
cccgaggctg acaagggcac tgtgttggca ctcactgaaa ataacttcga tgacaccatt 1020
gcagaaggaa taaccttcat caagttttat gctccatggt gtggtcattg taggactctg 1080
gctcctactt gggaggaact ctctaaaaag gaattccctg gtctggcggg ggtcaagatc 1140
gccgaagtag actgcactgc tgaacggaat atctgcagca agtattcggt acgaggctac 1200
cccacgttat tgcttttccg aggagggaag aaagtcagtg agcacagtgg aggcagagac 1260
cttgactcgt tacaccgctt tgtcctgagc caagcgaaag acgaacttta ggaacacagt 1320
tggaggtcac ctctcctgcc cagctcccgc accctgcgtt taggagttca gtcccacaga 1380
ggccactggg ttcccagtgg tggctgttca gaaagcagaa catactaagc gtgaggtatc 1440
ttctttgtgt gtgtgttttc caagccaaca cactctacag attctttatt aaatgtgtaa 1500
ctcatggtca ctgtgtaaac attttcagtg gcgatatatc ccctttgacc ttctcttgat 1560
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tatttgtggc tcctgagttg agtgattttg gtgaaagaaa gcacatccaa agcatagttt 1680
acctgcccac gagttctgga aaggttgcct tgtggcagta ttgacgttcc tctgatctta 1740
aggtcacagt tgactcaata ctgtgttggt ccgtagcatg gagcagattg aaatgcaaaa 1800
acccacacct ctggaggata ccttcacggc cgctgctgga gcttctgttg ctgtgaatac 1860
ttctctcagt gtgagaggtt agccgtgatg aaagcagcgt tacttctgac cgtgcctgag 1920
taagagaatg ctgatgccat aactttatgt gtcgatactt gtcaaatcag ttactgttca 1980
ggggatcctt ctgtttctca cggggtgaaa catgtcttta gttcctcatg ttaacacgaa 2040
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acgaggctca ttctcagtat ctcattaact cattgaaaga ttccagttgt atttgtcacc 2160
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tagaggcttg ctatacttgg tctgcttcaa ggaggtcgac cttctaatgt atgaagaatg 2340
ggatgcattt gatctcaaga ccaaagacag atgtcagtgg gctgctctgg ccctggtgtg 2400
cacggctgtg gcagctgttg atgccagtgt cctctaactc atgctgtcct tgtgattaaa 2460
cacctctatc tcccttggga ataagcacat acaggcttaa gctctaagat agataggtgt 2520
ttgtcctttt accatcgagc tacttcccat aataaccact ttgcatccaa cactcttcac 2580
ccacctccca tacgcaaggg gatgtggata cttggcccaa agtaactggt ggtaggaatc 2640
ttagaaacaa gaccacttat actgtctgtc tgaggcagaa gataacagca gcatctcgac 2700
cagcctctgc cttaaaggaa atctttatta atcacgtatg gttcacagat aattcttttt 2760
ttaaaaaaac ccaacctcct agagaagcac aactgtcaag agtcttgtac acacaacttc 2820
agctttgcat cacgagtctt gtattccaag aaaatcaaag tggtacaatt tgtttgttta 2880
cactatgata ctttctaaat aaactccttt ttttt 2915

<210> 45
<211> 432
<212> PRT
<213> Homo sapiens

47

<400> 45

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Met Pro Ala Arg Pro Gly Arg Leu Leu Pro Leu Leu Ala Arg Pro Ala
 1               5                  10                  15

Ala Leu Thr Ala Leu Leu Leu Leu Leu Leu Gly His Gly Gly Gly Gly
            20              25                  30

Arg Trp Gly Ala Arg Ala Gln Glu Ala Ala Ala Ala Ala Asp Gly
        35              40                  45

Pro Pro Ala Ala Asp Gly Glu Asp Gly Gln Asp Pro His Ser Lys His
    50              55                  60

Leu Tyr Thr Ala Asp Met Phe Thr His Gly Ile Gln Ser Ala Ala His
65              70                  75                      80

Phe Val Met Phe Phe Ala Pro Trp Cys Gly His Cys Gln Arg Leu Gln
            85                  90                  95

Pro Thr Trp Asn Asp Leu Gly Asp Lys Tyr Asn Ser Met Glu Asp Ala
            100             105                 110

Lys Val Tyr Val Ala Lys Val Asp Cys Thr Ala His Ser Asp Val Cys
        115                 120                 125

Ser Ala Gln Gly Val Arg Gly Tyr Pro Thr Leu Lys Leu Phe Lys Pro
    130                 135                 140

Gly Gln Glu Ala Val Lys Tyr Gln Gly Pro Arg Asp Phe Gln Thr Leu
145                 150                 155                 160

Glu Asn Trp Met Leu Gln Thr Leu Asn Glu Glu Pro Val Thr Pro Glu
            165                 170                 175

Pro Glu Val Glu Pro Pro Ser Ala Pro Glu Leu Lys Gln Gly Leu Tyr
        180             185                 190

Glu Leu Ser Ala Ser Asn Phe Glu Leu His Val Ala Gln Gly Asp His
    195                 200                 205

Phe Ile Lys Phe Phe Ala Pro Trp Cys Gly His Cys Lys Ala Leu Ala
    210                 215                 220

Pro Thr Trp Glu Gln Leu Ala Leu Gly Leu Glu His Ser Glu Thr Val
225                 230                 235                 240

Lys Ile Gly Lys Val Asp Cys Thr Gln His Tyr Glu Leu Cys Ser Gly
            245                 250                 255

Asn Gln Val Arg Gly Tyr Pro Thr Leu Leu Trp Phe Arg Asp Gly Lys
        260                 265                 270

Lys Val Asp Gln Tyr Lys Gly Lys Arg Asp Leu Glu Ser Leu Arg Glu
        275                 280                 285

Tyr Val Glu Ser Gln Leu Gln Arg Thr Glu Thr Gly Ala Thr Glu Thr
    290                 295                 300

Val Thr Pro Ser Glu Ala Pro Val Leu Ala Ala Glu Pro Glu Ala Asp
305                 310                 315                 320
```

48

```
Lys Gly Thr Val Leu Ala Leu Thr Glu Asn Asn Phe Asp Asp Thr Ile
              325                 330             335

Ala Glu Gly Ile Thr Phe Ile Lys Phe Tyr Ala Pro Trp Cys Gly His
              340                 345             350

Cys Arg Thr Leu Ala Pro Thr Trp Glu Glu Leu Ser Lys Lys Glu Phe
              355                 360             365

Pro Gly Leu Ala Gly Val Lys Ile Ala Glu Val Asp Cys Thr Ala Glu
      370                 375             380

Arg Asn Ile Cys Ser Lys Tyr Ser Val Arg Gly Tyr Pro Thr Leu Leu
385                 390                 395             400

Leu Phe Arg Gly Gly Lys Lys Val Ser Glu His Ser Gly Gly Arg Asp
              405                 410             415

Leu Asp Ser Leu His Arg Phe Val Leu Ser Gln Ala Lys Asp Glu Leu
              420                 425             430


<210> 46
<211> 551
<212> DNA
<213> Homo sapiens

<400> 46
ccagccagtg acagaaaaaa gagtgaatgt gcctttaaga agaagagcaa tgagacacag 60
tgtttcaact tcatccgtgt cctggtttct tacaatgtca cccatctcta cacctgcggc 120
accttcgcct tcagccctgc ttgtaccttc attgaacttc aagattccta cctgttgccc 180
atctcggagg acaaggtcat ggagggaaaa ggccaaagcc cctttgaccc cgctcacaag 240
catacggctg tcttggtgga tgggatgctc tattctggta ctatgaacaa cttcctgggc 300
agtgagccca tcctgatgcg cacactggga tcccagcctg tcctcaagac cgacaacttc 360
ctccgctggc tgcatcatga cgcctccttt gtggcagcca tcccttcgac ccaggtcgtc 420
tacttcttct cgaggagac agccagcgag tttgacttct ttgagaggct ccacacatcg 480
cgggtggcta gagtctgcaa gaatgacgtg ggcggcgaaa agctgctgca gaagaagtgg 540
accaccttcc t                                                     551


<210> 47
<211> 3252
<212> DNA
<213> Homo sapiens

<400> 47
aggatgatga aagtgagacc gtcttagggc ccttccagat agtgaacctt ctctgcccca 60
atgccccacc cctgccacca atacacgc ttctgctgcc tggggctctc ctattggtcc 120
tcgggggggat gtggtaagaa ctgctcaccc agaaagtgcc cgggtgcctg tttcccagaa 180
cctccctggt gacagtctgt ggctgagcat ggccctccca gccctgggcc tggaccccctg 240
gagcctcctg ggccttttcc tcttccaact gcttcagctg ctgctgccga cgacgaccgc 300
ggggggaggc gggcaggggc ccatgcccag ggtcagatac tatgcagggg atgaacgtag 360
ggcacttagc ttcttccacc agaagggcct ccaggatttt gacactctgc tcctgagtgg 420
tgatggaaat actctctacg tgggggctcg agaagccatt ctggccttgg atatccagga 480
tccaggggtc cccaggctaa agaacatgat accgtggcca gccagtgaca gaaaaaagag 540
tgaatgtgcc tttaagaaga agagcaatga gacacagtgt ttcaacttca tccgtgtcct 600
ggtttcttac aatgtcaccc atctctacac ctgcggcacc ttcgccttca gccctgcttg 660
taccttcatt gaacttcaag attcctacct gttgcccatc tcggaggaca aggtcatgga 720
gggaaaaggc caaagcccct tgaccccgc tcacaagcat acggctgtct tggtggatgg 780
gatgctctat tctggtacta tgaacaactt cctgggcagt gagcccatcc tgatgcgcac 840
actgggatcc cagcctgtcc tcaagaccga caacttcctc cgctggctgc atcatgacgc 900
```

49

```
ctcctttgtg gcagccatcc cttcgaccca ggtcgtctac ttcttcttcg aggagacagc 960
cagcgagttt gacttctttg agaggctcca cacatcgcgg gtggctagag tctgcaagaa 1020
tgacgtgggc ggcgaaaagc tgctgcagaa gaagtggacc accttcctga aggcccagct 1080
gctctctgca cccagccggg gcagctgccc ttcaacgtca tccgccacgc ggtcctgctc 1140
cccgccgatt ctcccacagc tccccacatc tacgcagtct tcacctccca gtgggcaggt 1200
tggcgggacc aggagctctg cggtttgtgc cttctctctc ttggacattg aacgtgtctt 1260
taaggggaaa ttcaaagagt tgaacaaaga aacttcacgc tggactactt ataggggccc 1320
tgagaccaac ccccggccag gcagttgctc agtgggcccc tcctctgata aggccctgac 1380
cttcatgaag gaccatttcc tgatggatga gcaagtggtg gggacgcccc tgctggtgaa 1440
atctggcgtg gagtatacac ggcttgcagt ggagacagcc cagggccttg atgggcacag 1500
ccatcttgtc atgtacctgg gaaccaccac agggtcgctc cacaaggctg tggtaagtgg 1560
ggacagcagt gctcatctgg tggaagagat tcagctgttc cctgaccctg aacctgttcg 1620
caacctgcag ctggccccca cccagggtgc agtgtttgta ggcttctcag gaggtgtctg 1680
gagggtgccc cgagccaact gtagtgtcta tgagagctgt gtggactgtg tccttgcccg 1740
ggacccccac tgtgcctggg accctgagtc ccgaacctgt tgcctcctgt ctgcccccaa 1800
cctgaactcc tggaagcagg acatggagcg ggggaaccca gagtgggcat gtgccagtgg 1860
ccccatgagc aggagccttc ggcctcagag ccgccgcaa atcattaaag aagtcctggc 1920
tgtccccaac tccatcctgg agctcccctg ccccacctg tcagccttgg cctcttatta 1980
ttggagtcat ggcccagcag cagtcccaga agcctcttcc actgtctaca atggctccct 2040
cttgctgata gtgcaggatg gagttggggg tctctaccag tgctgggcaa ctgagaatgg 2100
cttttcatac cctgtgatct cctactgggt ggacagccag gaccagaccc tggccctgga 2160
tcctgaactg gcaggcatcc cccgggagca tgtgaaggtc ccgttgacca gggtcagtgg 2220
tggggccgcc ctggctgccc agcagtccta ctggccccac tttgtcactg tcactgtcct 2280
ctttgcctta gtgctttcag gagccctcat catcctcgtg gcctccccat tgagagcact 2340
ccgggctcgg ggcaaggttc agggctgtga gaccctgcgc cctggggaga aggccccgtt 2400
aagcagagag caacacctcc agtctcccaa ggaatgcagg acctctgcca gtgatgtgga 2460
cgctgacaac aactgcctag gcactgaggt agcttaaact ctaggcacag gccggggctg 2520
cggtgcaggc acctggccat gctggctggg cggcccaagc acagccctga ctaggatgac 2580
agcagcacaa aagaccacct ttctcccctg agaggagctt ctgctactct gcatcactga 2640
tgacactcag cagggtgatg cacagcagtc tgcctcccct atgggactcc cttctaccaa 2700
gcacatgagc tctctaacag ggtgggggct accccagac ctgctcctac actgatattg 2760
aagaacctgg agaggatcct tcagttctgg ccattccagg gaccctccag aaacacagtg 2820
tttcaagaga ccctaaaaaa cctgcctgtc ccaggaccct atggtaatga acaccaaaca 2880
tctaaacaat catatgctaa catgccactc ctggaaactc cactctgaag ctgccgcttt 2940
ggacaccaac actcccttct cccagggtca tgcagggatc tgctccctcc tgcttccctt 3000
accagtcgtg caccgctgac tcccaggaag tctttcctga agtctgacca cctttcttct 3060
tgcttcagtt ggggcagact ctgatccctt ctgccctggc agaatggcag gggtaatctg 3120
agccttcttc actcctttac cctagctgac cccttcacct ctcccctcc ctttttccttt 3180
gttttgggat tcagaaaact gcttgtcaga gactgtttat tttttattaa aaatataagg 3240
cttatgtatg at                                                      3252
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<210> 48
<211> 762
<212> PRT
<213> Homo sapiens

<400> 48
Met Ala Leu Pro Ala Leu Gly Leu Asp Pro Trp Ser Leu Leu Gly Leu
 1   5   10   15

Phe Leu Phe Gln Leu Leu Gln Leu Leu Leu Pro Thr Thr Thr Ala Gly
             20   25   30

Gly Gly Gly Gln Gly Pro Met Pro Arg Val Arg Tyr Tyr Ala Gly Asp
         35   40   45

Glu Arg Arg Ala Leu Ser Phe Phe His Gln Lys Gly Leu Gln Asp Phe
     50   55   60

50

Asp Thr Leu Leu Leu Ser Gly Asp Gly Asn Thr Leu Tyr Val Gly Ala
 65   70   75   80

Arg Glu Ala Ile Leu Ala Leu Asp Ile Gln Asp Pro Gly Val Pro Arg
                 85   90   95

Leu Lys Asn Met Ile Pro Trp Pro Ala Ser Asp Arg Lys Lys Ser Glu
            100   105   110

Cys Ala Phe Lys Lys Lys Ser Asn Glu Thr Gln Cys Phe Asn Phe Ile
            115   120   125

Arg Val Leu Val Ser Tyr Asn Val Thr His Leu Tyr Thr Cys Gly Thr
    130   135   140

Phe Ala Phe Ser Pro Ala Cys Thr Phe Ile Glu Leu Gln Asp Ser Tyr
145   150   155   160

Leu Leu Pro Ile Ser Glu Asp Lys Val Met Glu Gly Lys Gly Gln Ser
            165   170   175

Pro Phe Asp Pro Ala His Lys His Thr Ala Val Leu Val Asp Gly Met
            180   185   190

Leu Tyr Ser Gly Thr Met Asn Asn Phe Leu Gly Ser Glu Pro Ile Leu
    195   200   205

Met Arg Thr Leu Gly Ser Gln Pro Val Leu Lys Thr Asp Asn Phe Leu
    210   215   220

Arg Trp Leu His His Asp Ala Ser Phe Val Ala Ala Ile Pro Ser Thr
225   230   235   240

Gln Val Val Tyr Phe Phe Phe Glu Glu Thr Ala Ser Glu Phe Asp Phe
            245   250   255

Phe Glu Arg Leu His Thr Ser Arg Val Ala Arg Val Cys Lys Asn Asp
            260   265   270

Val Gly Gly Glu Lys Leu Leu Gln Lys Lys Trp Thr Thr Phe Leu Lys
    275   280   285

Ala Gln Leu Leu Ser Ala Pro Ser Arg Gly Ser Cys Pro Ser Thr Ser
    290   295   300

Ser Ala Thr Arg Ser Cys Ser Pro Pro Ile Leu Pro Gln Leu Pro Thr
305   310   315   320

Ser Thr Gln Ser Ser Pro Pro Ser Gly Gln Val Gly Gly Thr Arg Ser
            325   330   335

Ser Ala Val Cys Ala Phe Ser Leu Leu Asp Ile Glu Arg Val Phe Lys
            340   345   350

Gly Lys Phe Lys Glu Leu Asn Lys Glu Thr Ser Arg Trp Thr Thr Tyr
            355   360   365

Arg Gly Pro Glu Thr Asn Pro Arg Pro Gly Ser Cys Ser Val Gly Pro
    370   375   380

Ser Ser Asp Lys Ala Leu Thr Phe Met Lys Asp His Phe Leu Met Asp
385   390   395   400

Glu Gln Val Val Gly Thr Pro Leu Leu Val Lys Ser Gly Val Glu Tyr
            405   410   415

Thr Arg Leu Ala Val Glu Thr Ala Gln Gly Leu Asp Gly His Ser His
        420   425   430

Leu Val Met Tyr Leu Gly Thr Thr Thr Gly Ser Leu His Lys Ala Val
        435   440   445

Val Ser Gly Asp Ser Ser Ala His Leu Val Glu Glu Ile Gln Leu Phe
    450   455   460

Pro Asp Pro Glu Pro Val Arg Asn Leu Gln Leu Ala Pro Thr Gln Gly
465   470   475   480

Ala Val Phe Val Gly Phe Ser Gly Gly Val Trp Arg Val Pro Arg Ala
            485   490   495

Asn Cys Ser Val Tyr Glu Ser Cys Val Asp Cys Val Leu Ala Arg Asp
        500   505   510

Pro His Cys Ala Trp Asp Pro Glu Ser Arg Thr Cys Cys Leu Leu Ser
    515   520   525

Ala Pro Asn Leu Asn Ser Trp Lys Gln Asp Met Glu Arg Gly Asn Pro
    530   535   540

Glu Trp Ala Cys Ala Ser Gly Pro Met Ser Arg Ser Leu Arg Pro Gln
545   550   555   560

Ser Arg Pro Gln Ile Ile Lys Glu Val Leu Ala Val Pro Asn Ser Ile
            565   570   575

Leu Glu Leu Pro Cys Pro His Leu Ser Ala Leu Ala Ser Tyr Tyr Trp
        580   585   590

Ser His Gly Pro Ala Ala Val Pro Glu Ala Ser Ser Thr Val Tyr Asn
    595   600   605

Gly Ser Leu Leu Leu Ile Val Gln Asp Gly Val Gly Gly Leu Tyr Gln
610   615   620

Cys Trp Ala Thr Glu Asn Gly Phe Ser Tyr Pro Val Ile Ser Tyr Trp
625   630   635   640

Val Asp Ser Gln Asp Gln Thr Leu Ala Leu Asp Pro Glu Leu Ala Gly
            645   650   655

Ile Pro Arg Glu His Val Lys Val Pro Leu Thr Arg Val Ser Gly Gly
        660   665   670

Ala Ala Leu Ala Ala Gln Gln Ser Tyr Trp Pro His Phe Val Thr Val
        675   680   685

Thr Val Leu Phe Ala Leu Val Leu Ser Gly Ala Leu Ile Ile Leu Val
    690   695   700

52

```
Ala Ser Pro Leu Arg Ala Leu Arg Ala Arg Gly Lys Val Gln Gly Cys
705                 710                 715                 720

Glu Thr Leu Arg Pro Gly Glu Lys Ala Pro Leu Ser Arg Glu Gln His
                725                 730                 735

Leu Gln Ser Pro Lys Glu Cys Arg Thr Ser Ala Ser Asp Val Asp Ala
                740                 745                 750

Asp Asn Asn Cys Leu Gly Thr Glu Val Ala
            755                 760
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<210> 49
<211> 182
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (1)..(182)
<223> n = g, a, c or t

<400> 49
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accagcagtc ctgcggcacc tacctccgcg tgcgccagcc gccccccagg cccttcctgg    60
acatggggga gggcaccaag aaccgaatca tcacagccga ggggatcatc ctcctgttct   120
gcgcggtggt gcctgggacg ctgctgctgt tnaggaaacg atggcaagaa cganaactcn   180
gg                                                                  182
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<210> 50
<211> 60
<212> PRT
<213> Homo sapiens

<220>
<221> MOD_RES
<222> (1)..(60)
<223> Xaa = any amino acid

<400> 50
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Gln Gln Ser Cys Gly Thr Tyr Leu Arg Val Arg Gln Pro Pro Pro Arg
  1             5                 10                  15

Pro Phe Leu Asp Met Gly Glu Gly Thr Lys Asn Arg Ile Ile Thr Ala
            20                  25                  30

Glu Gly Ile Ile Leu Leu Phe Cys Ala Val Val Pro Gly Thr Leu Leu
        35                  40                  45

Leu Xaa Arg Lys Arg Trp Gln Glu Arg Xaa Leu Xaa
    50                  55                  60
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<210> 51
<211> 182
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (1)..(182)
<223> n = g, a, c or t

<400> 51
accagcagtc ctgcggcacc tacctccgcg tgcgccagcc gcccccagg cccttcctgg 60
acatggggga gggcaccaag aaccgaatca tcacagccga ggggatcatc ctcctgttct 120
gcgcggtggt gcctgggacg ctgctgctgt tnaggaaacg atggcaagaa cganaactcn 180
gg   182

<210> 52
<211> 60
<212> PRT
<213> Homo sapiens

<220>
<221> MOD_RES
<222> (1)..(60)
<223> Xaa = any amino acid

<400> 52
Gln Gln Ser Cys Gly Thr Tyr Leu Arg Val Arg Gln Pro Pro Pro Arg
 1   5   10   15

Pro Phe Leu Asp Met Gly Glu Gly Thr Lys Asn Arg Ile Ile Thr Ala
              20   25   30

Glu Gly Ile Ile Leu Leu Phe Cys Ala Val Val Pro Gly Thr Leu Leu
          35   40   45

Leu Xaa Arg Lys Arg Trp Gln Glu Arg Xaa Leu Xaa
      50   55   60

<210> 53
<211> 1107
<212> DNA
<213> Homo sapiens

<400> 53
tgctgcaact caaactaacc aacccactgg gagaagatgc ctggggggtcc aggagtcctc 60
caagctctgc ctgccaccat cttcctcctc ttcctgctgt ctgctgtcta cctgggccct 120
gggtgccagg ccctgtggat gcacaaggtc ccagcatcat tgatggtgag cctggggggaa 180
gacgcccact tccaatgccc gcacaatagc agcaacaacg ccaacgtcac ctggtggcgc 240
gtcctccatg gcaactacac gtggcccccct gagttcttgg gcccgggcga ggaccccaat 300
ggtacgctga tcatccagaa tgtgaacaag agccatgggg gcatatacgt gtgccgggtc 360
caggagggca acgagtcata ccagcagtcc tgcggcacct acctccgcgt gcgccagccg 420
ccccccaggc ccttcctgga catggggggag ggcaccaaga accgaatcat cacagccgag 480
gggatcatcc tcctgttctg cgcggtggtg cctgggacgc tgctgctgtt caggaaacga 540
tggcagaacg agaagctcgg gttggatgcc ggggatgaat atgaagatga aaacctttat 600
gaaggcctga acctggacga ctgctccatg tatgaggaca tctcccgggg cctccagggc 660
acctaccagg atgtgggcag cctcaacata ggagatgtcc agctggagaa gccgtgacac 720
ccctactcct gccaggctgc ccccgcctgc tgtgcaccca gctccagtgt ctcagctcac 780
ttccctggga cattctcctt tcagcccttc tggggggcttc cttagtcata ttcccccagt 840
gggggggtggg agggtaacct cactcttctc caggccaggc ctccttggac tcccctggggg 900
gtgtcccact cttcttccct ctaaactgcc ccacctccta acctaatccc cacgccccgc 960
tgccttttccc aggctcccct cacccagcgg gtaatgagcc cttaatcgct gcctctaggg 1020
gagctgattg tagcagcctc gttagtgtca ccccctcctc cctgatctgt cagggccact 1080
tagtgataat aaattcttcc caactgc   1107

54

<210> 54
<211> 226
<212> PRT
<213> Homo sapiens

<400> 54
Met Pro Gly Gly Pro Gly Val Leu Gln Ala Leu Pro Ala Thr Ile Phe
 1   5   10   15

Leu Leu Phe Leu Leu Ser Ala Val Tyr Leu Gly Pro Gly Cys Gln Ala
            20   25   30

Leu Trp Met His Lys Val Pro Ala Ser Leu Met Val Ser Leu Gly Glu
        35   40   45

Asp Ala His Phe Gln Cys Pro His Asn Ser Ser Asn Asn Ala Asn Val
    50   55   60

Thr Trp Trp Arg Val Leu His Gly Asn Tyr Thr Trp Pro Pro Glu Phe
65   70   75   80

Leu Gly Pro Gly Glu Asp Pro Asn Gly Thr Leu Ile Ile Gln Asn Val
                85   90   95

Asn Lys Ser His Gly Gly Ile Tyr Val Cys Arg Val Gln Glu Gly Asn
            100   105   110

Glu Ser Tyr Gln Gln Ser Cys Gly Thr Tyr Leu Arg Val Arg Gln Pro
            115   120   125

Pro Pro Arg Pro Phe Leu Asp Met Gly Glu Gly Thr Lys Asn Arg Ile
    130   135   140

Ile Thr Ala Glu Gly Ile Ile Leu Leu Phe Cys Ala Val Val Pro Gly
145   150   155   160

Thr Leu Leu Leu Phe Arg Lys Arg Trp Gln Asn Glu Lys Leu Gly Leu
                165   170   175

Asp Ala Gly Asp Glu Tyr Glu Asp Glu Asn Leu Tyr Glu Gly Leu Asn
            180   185   190

Leu Asp Asp Cys Ser Met Tyr Glu Asp Ile Ser Arg Gly Leu Gln Gly
            195   200   205

Thr Tyr Gln Asp Val Gly Ser Leu Asn Ile Gly Asp Val Gln Leu Glu
    210   215   220

Lys Pro
225

<210> 55
<211> 1038
<212> DNA
<213> Homo sapiens

<400> 55
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ccatggggca tcattctgga gtccctggcc atacttggca tcgtggtcac aattctgcta 120
ctcttagcat ttctcttcct catgcgaaag atccaagact gcagccagtg gaatgtcctc 180

```
cccacccagc tcctcttcct cctgagtgtc ctggggctct tcggactcgc ttttgccttc 240
atcatcgagc tcaatcaaca aactgccccc gtacgctact ttctctttgg ggttctcttt 300
gctctctgtt tctcatgcct cttagctcat gcctccaatc tagtgaagct ggttcggggt 360
tgtgtctcct tctcctggac gacaattctg tgcattgcta ttggttgcag tctgttgcaa 420
atcattattg ccactgagta tgtgactctc atcatgacca gaggtatgat gtttgtgaat 480
atgacaccct gccagctcaa tgtggacttt gttgtactcc tggtctatgt cctcttcctg 540
atggccctca cattcttcgt ctccaaagcc accttctgtg cccgtgtga gaactggaag 600
cagcatggaa ggctcatctt tatcactgtg ctcttctcca tcatcatctg ggtggtgtgg 660
atctccatgc tcctgagagg caacccgcag ttccagcgac agccccagtg ggacgacccg 720
gtcgtctgca ttgctctggt caccaacgca tgggtttttcc tgctgctgta catcgtccct 780
gagctctgca ttctctacag atcgtgtaga caggagtgcc ctttacaagg caatgcctgc 840
cccgtcacag cctaccaaca cagcttccaa gtggagaacc aggagctctc cagagcccga 900
gacagtgatg gagctgagga ggatgtagca ttaacttcat atggtactcc cattcagccg 960
cagactgttg atcccacaca agagtgtttc atcccacagg ctaaactaag cccccagcaa 1020
gatgcaggag gagtataa                                             1038
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<210> 56
<211> 345
<212> PRT
<213> Homo sapiens

<400> 56

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Met Tyr Lys Asp Cys Ile Glu Ser Thr Gly Asp Tyr Phe Leu Leu Cys
 1               5                  10                 15

Asp Ala Glu Gly Pro Trp Gly Ile Ile Leu Glu Ser Leu Ala Ile Leu
             20                  25                 30

Gly Ile Val Val Thr Ile Leu Leu Leu Leu Ala Phe Leu Phe Leu Met
         35                  40                 45

Arg Lys Ile Gln Asp Cys Ser Gln Trp Asn Val Leu Pro Thr Gln Leu
     50                  55                 60

Leu Phe Leu Leu Ser Val Leu Gly Leu Phe Gly Leu Ala Phe Ala Phe
 65                  70                  75                 80

Ile Ile Glu Leu Asn Gln Gln Thr Ala Pro Val Arg Tyr Phe Leu Phe
                 85                  90                 95

Gly Val Leu Phe Ala Leu Cys Phe Ser Cys Leu Leu Ala His Ala Ser
             100                 105                 110

Asn Leu Val Lys Leu Val Arg Gly Cys Val Ser Phe Ser Trp Thr Thr
             115                 120                 125

Ile Leu Cys Ile Ala Ile Gly Cys Ser Leu Leu Gln Ile Ile Ile Ala
     130                 135                 140

Thr Glu Tyr Val Thr Leu Ile Met Thr Arg Gly Met Met Phe Val Asn
145                 150                 155                 160

Met Thr Pro Cys Gln Leu Asn Val Asp Phe Val Val Leu Leu Val Tyr
             165                 170                 175

Val Leu Phe Leu Met Ala Leu Thr Phe Phe Val Ser Lys Ala Thr Phe
             180                 185                 190

Cys Gly Pro Cys Glu Asn Trp Lys Gln His Gly Arg Leu Ile Phe Ile
         195                 200                 205
```

56

```
Thr Val Leu Phe Ser Ile Ile Ile Trp Val Val Trp Ile Ser Met Leu
    210             215             220
```
```
Leu Arg Gly Asn Pro Gln Phe Gln Arg Gln Pro Gln Trp Asp Asp Pro
225             230             235             240
```
```
Val Val Cys Ile Ala Leu Val Thr Asn Ala Trp Val Phe Leu Leu Leu
                245             250             255
```
```
Tyr Ile Val Pro Glu Leu Cys Ile Leu Tyr Arg Ser Cys Arg Gln Glu
                260             265             270
```
```
Cys Pro Leu Gln Gly Asn Ala Cys Pro Val Thr Ala Tyr Gln His Ser
        275             280             285
```
```
Phe Gln Val Glu Asn Gln Glu Leu Ser Arg Ala Arg Asp Ser Asp Gly
        290             295             300
```
```
Ala Glu Glu Asp Val Ala Leu Thr Ser Tyr Gly Thr Pro Ile Gln Pro
305             310             315             320
```
```
Gln Thr Val Asp Pro Thr Gln Glu Cys Phe Ile Pro Gln Ala Lys Leu
                325             330             335
```
```
Ser Pro Gln Gln Asp Ala Gly Gly Val
        340             345
```

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<210> 57
<211> 2457
<212> DNA
<213> Homo sapiens
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<400> 57
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cgaatccgag ccgagcggag aggaatccgg cagtagagag cggactccag ccggcggacc 120
ctgcagccct cgcctgggac agcggcgcgc tgggcaggcg cccaagagag catcgagcag 180
cggaacccgc gaagccggcc cgcagccgcg acccgcgcag cctgccgctc tcccgccgcc 240
ggtccgggca gcatgaggcg cgcggcgctc tggctctggc tgtgcgcgct ggcgctgagc 300
ctgcagccgg ccctgccgca aattgtggct actaatttgc cccctgaaga tcaagatggc 360
tctggggatg actctgacaa cttctccggc tcaggtgcag gtgctttgca agatatcacc 420
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57

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cgtgtgagaa gtgaatgctg ggactcagcc ttcagacaga gaggactgta gggagggcgg 2160
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<210> 58
<211> 310
<212> PRT
<213> Homo sapiens

<400> 58

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Met Arg Arg Ala Ala Leu Trp Leu Trp Leu Cys Ala Leu Ala Leu Ser
 1               5                  10                  15

Leu Gln Pro Ala Leu Pro Gln Ile Val Ala Thr Asn Leu Pro Pro Glu
            20                  25                  30

Asp Gln Asp Gly Ser Gly Asp Asp Ser Asp Asn Phe Ser Gly Ser Gly
        35                  40                  45

Ala Gly Ala Leu Gln Asp Ile Thr Leu Ser Gln Gln Thr Pro Ser Thr
    50                  55                  60

Trp Lys Asp Thr Gln Leu Leu Thr Ala Ile Pro Thr Ser Pro Glu Pro
 65                  70                  75                  80

Thr Gly Leu Glu Ala Thr Ala Ala Ser Thr Ser Thr Leu Pro Ala Gly
                85                  90                  95

Glu Gly Pro Lys Glu Gly Glu Ala Val Val Leu Pro Glu Val Glu Pro
            100                 105                 110

Gly Leu Thr Ala Arg Glu Gln Glu Ala Thr Pro Arg Pro Arg Glu Thr
            115                 120                 125

Thr Gln Leu Pro Thr Thr His Gln Ala Ser Thr Thr Thr Ala Thr Thr
    130                 135                 140

Ala Gln Glu Pro Ala Thr Ser His Pro His Arg Asp Met Gln Pro Gly
145                 150                 155                 160

His His Glu Thr Ser Thr Pro Ala Gly Pro Ser Gln Ala Asp Leu His
                165                 170                 175

Thr Pro His Thr Glu Asp Gly Gly Pro Ser Ala Thr Glu Arg Ala Ala
            180                 185                 190

Glu Asp Gly Ala Ser Ser Gln Leu Pro Ala Ala Glu Gly Ser Gly Glu
            195                 200                 205
```

```
Gln Asp Phe Thr Phe Glu Thr Ser Gly Glu Asn Thr Ala Val Val Ala
    210                 215                 220

Val Glu Pro Asp Arg Arg Asn Gln Ser Pro Val Asp Gln Gly Ala Thr
225                 230                 235                 240

Gly Ala Ser Gln Gly Leu Leu Asp Arg Lys Glu Val Leu Gly Gly Val
                245                 250                 255

Ile Ala Val Gly Leu Val Gly Leu Ile Phe Ala Val Cys Leu Val Gly
                260                 265                 270

Phe Met Leu Tyr Arg Met Lys Lys Lys Asp Glu Gly Ser Tyr Ser Leu
                275                 280                 285

Glu Glu Pro Lys Gln Ala Asn Gly Gly Ala Tyr Gln Lys Pro Thr Lys
    290                 295                 300

Gln Glu Glu Phe Tyr Ala
305                 310


<210> 59
<211> 357
<212> DNA
<213> Homo sapiens

<400> 59
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gtcactctga cctgcttgct gaatttctcc tgctatgggt atccgatcca attgcagtgg  180
ctcctagagg gggttccaat gaggcaggct gctgtcacct cgacctcctt gaccatcaag  240
tctgtcttca cccggagcga gctcaagttc tccccacagt ggagtcacca tgggaagatt  300
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<210> 60
<211> 3260
<212> DNA
<213> Homo sapiens

<400> 60
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gtaaatgggt ttttgagcac cctgaaaccc tctacgcctg ggaggggggcc tgcgtctgga  180
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ccatgacctg cgaggtcagc agcagcaacc ggagtacaca cggtatcc tggctcaagg  900
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accagagtgg gaagtactgc tgtcaggtct ccaatgacgt gggcccggga aggtcggaag  1020
aagtgttcct gcaagtgcag tatgccccgg aaccttccac ggttcagatc ctccactcac  1080
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<210> 61
<211> 847
<212> PRT
<213> Homo sapiens

<400> 61

Met	His	Leu	Leu	Gly	Pro	Trp	Leu	Leu	Leu	Leu	Val	Leu	Glu	Tyr	Leu
1				5					10					15	

Ala	Phe	Ser	Asp	Ser	Ser	Lys	Trp	Val	Phe	Glu	His	Pro	Glu	Thr	Leu
			20					25				30			

Tyr	Ala	Trp	Glu	Gly	Ala	Cys	Val	Trp	Ile	Pro	Cys	Thr	Tyr	Arg	Ala
		35				40					45				

Leu	Asp	Gly	Asp	Leu	Glu	Ser	Phe	Ile	Leu	Phe	His	Asn	Pro	Glu	Tyr
	50					55					60				

Asn	Lys	Asn	Thr	Ser	Lys	Phe	Asp	Gly	Thr	Arg	Leu	Tyr	Glu	Ser	Thr
65				70					75						80

Lys	Asp	Gly	Lys	Val	Pro	Ser	Glu	Gln	Lys	Arg	Val	Gln	Phe	Leu	Gly
				85					90					95	

60

Asp Lys Asn Lys Asn Cys Thr Leu Ser Ile His Pro Val His Leu Asn
            100   105   110

Asp Ser Gly Gln Leu Gly Leu Arg Met Glu Ser Lys Thr Glu Lys Trp
            115   120   125

Met Glu Arg Ile His Leu Asn Val Ser Glu Arg Pro Phe Pro Pro His
    130   135   140

Ile Gln Leu Pro Pro Glu Ile Gln Glu Ser Gln Glu Val Thr Leu Thr
145   150   155   160

Cys Leu Leu Asn Phe Ser Cys Tyr Gly Tyr Pro Ile Gln Leu Gln Trp
                165   170   175

Leu Leu Glu Gly Val Pro Met Arg Gln Ala Ala Val Thr Ser Thr Ser
            180   185   190

Leu Thr Ile Lys Ser Val Phe Thr Arg Ser Glu Leu Lys Phe Ser Pro
            195   200   205

Gln Trp Ser His His Gly Lys Ile Val Thr Cys Gln Leu Gln Asp Ala
    210   215   220

Asp Gly Lys Phe Leu Ser Asn Asp Thr Val Gln Leu Asn Val Lys His
225   230   235   240

Thr Pro Lys Leu Glu Ile Lys Val Thr Pro Ser Asp Ala Ile Val Arg
                245   250   255

Glu Gly Asp Ser Val Thr Met Thr Cys Glu Val Ser Ser Ser Asn Pro
            260   265   270

Glu Tyr Thr Thr Val Ser Trp Leu Lys Asp Gly Thr Ser Leu Lys Lys
            275   280   285

Gln Asn Thr Phe Thr Leu Asn Leu Arg Glu Val Thr Lys Asp Gln Ser
    290   295   300

Gly Lys Tyr Cys Cys Gln Val Ser Asn Asp Val Gly Pro Gly Arg Ser
305   310   315   320

Glu Glu Val Phe Leu Gln Val Gln Tyr Ala Pro Glu Pro Ser Thr Val
            325   330   335

Gln Ile Leu His Ser Pro Ala Val Glu Gly Ser Gln Val Glu Phe Leu
            340   345   350

Cys Met Ser Leu Ala Asn Pro Leu Pro Thr Asn Tyr Thr Trp Tyr His
            355   .   360   365

Asn Gly Lys Glu Met Gln Gly Arg Thr Glu Glu Lys Val His Ile Pro
    370   375   380

Lys Ile Leu Pro Trp His Ala Gly Thr Tyr Ser Cys Val Ala Glu Asn
385   390   395   400

Ile Leu Gly Thr Gly Gln Arg Gly Pro Gly Ala Glu Leu Asp Val Gln
                405   410   415

61

```
Tyr Pro Pro Lys Lys Val Thr Thr Val Ile Gln Asn Pro Met Pro Ile
            420             425             430

Arg Glu Gly Asp Thr Val Thr Leu Ser Cys Asn Tyr Asn Ser Ser Asn
            435             440             445

Pro Ser Val Thr Arg Tyr Glu Trp Lys Pro His Gly Ala Trp Glu Glu
    450             455             460

Pro Ser Leu Gly Val Leu Lys Ile Gln Asn Val Gly Trp Asp Asn Thr
465             470             475             480

Thr Ile Ala Cys Ala Arg Cys Asn Ser Trp Cys Ser Trp Ala Ser Pro
            485             490             495

Val Ala Leu Asn Val Gln Tyr Ala Pro Arg Asp Val Arg Val Arg Lys
            500             505             510

Ile Lys Pro Leu Ser Glu Ile His Ser Gly Asn Ser Val Ser Leu Gln
    515             520             525

Cys Asp Phe Ser Ser Ser His Pro Lys Glu Val Gln Phe Phe Trp Glu
    530             535             540

Lys Asn Gly Arg Leu Leu Gly Lys Glu Ser Gln Leu Asn Phe Asp Ser
545             550             555             560

Ile Ser Pro Glu Asp Ala Gly Ser Tyr Ser Cys Trp Val Asn Asn Ser
            565             570             575

Ile Gly Gln Thr Ala Ser Lys Ala Trp Thr Leu Glu Val Leu Tyr Ala
            580             585             590

Pro Arg Arg Leu Arg Val Ser Met Ser Pro Gly Asp Gln Val Met Glu
    595             600             605

Gly Lys Ser Ala Thr Leu Thr Cys Glu Ser Asp Ala Asn Pro Pro Val
    610             615             620

Ser His Tyr Thr Trp Phe Asp Trp Asn Asn Gln Ser Leu Pro His His
625             630             635             640

Ser Gln Lys Leu Arg Leu Glu Pro Val Lys Val Gln His Ser Gly Ala
            645             650             655

Tyr Trp Cys Gln Gly Thr Asn Ser Val Gly Lys Gly Arg Ser Pro Leu
            660             665             670

Ser Thr Leu Thr Val Tyr Tyr Ser Pro Glu Thr Ile Gly Arg Arg Val
            675             680             685

Ala Val Gly Leu Gly Ser Cys Leu Ala Ile Leu Ile Leu Ala Ile Cys
            690             695             700

Gly Leu Lys Leu Gln Arg Arg Trp Lys Arg Thr Gln Ser Gln Gln Gly
705             710             715             720

Leu Gln Glu Asn Ser Ser Gly Gln Ser Phe Phe Val Arg Asn Lys Lys
            725             730             735
```

```
Val Arg Arg Ala Pro Leu Ser Glu Gly Pro His Ser Leu Gly Cys Tyr
            740                 745             750

Asn Pro Met Met Glu Asp Gly Ile Ser Tyr Thr Thr Leu Arg Phe Pro
            755                 760             765

Glu Met Asn Ile Pro Arg Thr Gly Asp Ala Glu Ser Ser Glu Met Gln
    770                 775             780

Arg Pro Pro Arg Thr Cys Asp Asp Thr Val Thr Tyr Ser Ala Leu His
785                 790             795                 800

Lys Arg Gln Val Gly Asp Tyr Glu Asn Val Ile Pro Asp Phe Pro Glu
            805                 810             815

Asp Glu Gly Ile His Tyr Ser Glu Leu Ile Gln Phe Gly Val Gly Glu
            820                 825             830

Arg Pro Gln Ala Gln Glu Asn Val Asp Tyr Val Ile Leu Lys His
        835                 840             845
```

<210> 62
<211> 340
<212> DNA
<213> Homo sapiens

<400> 62
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cacctacaga ccacttcact tcccctgtcc gcagcgtcac tatgtcctca taggtggctg 180
tctggtcaat gtccaggccc tcgtaggtgt gatcttcctc catgccagcc ttgctgtcat 240
ccttgtccag cagcaggaag ataggcacga tgatgaagag gatgatcagc agcgtctgga 300
tcatgatgat accatccttc agcgtgttcc tctgcttcag                     340
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<210> 63
<211> 79
<212> PRT
<213> Homo sapiens

<400> 63
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Leu Lys Gln Arg Asn Thr Leu Lys Asp Gly Ile Ile Met Ile Gln Thr
  1             5                 10                  15

Leu Leu Ile Ile Leu Phe Ile Ile Val Pro Ile Phe Leu Leu Leu Asp
            20                  25                  30

Lys Asp Asp Ser Lys Ala Gly Met Glu Glu Asp His Thr Tyr Glu Gly
            35                  40                  45

Leu Asp Ile Asp Gln Thr Ala Thr Tyr Glu Asp Ile Val Thr Leu Arg
    50                  55                  60

Thr Gly Glu Val Lys Trp Ser Val Gly Glu His Pro Gly Gln Glu
 65                  70                  75
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<210> 64
<211> 340
<212> DNA
<213> Homo sapiens

<400> 64
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cacctacaga ccacttcact tcccctgtcc gcagcgtcac tatgtcctca taggtggctg 180
tctggtcaat gtccaggccc tcgtaggtgt gatcttcctc catgccagcc ttgctgtcat 240
ccttgtccag cagcaggaag ataggcacga tgatgaagag gatgatcagc agcgtctgga 300
tcatgatgat accatccttc agcgtgttcc tctgcttcag 340

<210> 65
<211> 1226
<212> DNA
<213> Homo sapiens

<400> 65
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gccagatcgg aggaccggta ccggaatccc aaaggtagtg cttgttcgcg gatctggcag 180
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<210> 66
<211> 229
<212> PRT
<213> Homo sapiens

<400> 66
Met Ala Arg Leu Ala Leu Ser Pro Val Pro Ser His Trp Met Val Ala
1   5   10   15

Leu Leu Leu Leu Leu Ser Ala Glu Pro Val Pro Ala Ala Arg Ser Glu
                20   25   30

Asp Arg Tyr Arg Asn Pro Lys Gly Ser Ala Cys Ser Arg Ile Trp Gln
            35   40   45

Ser Pro Arg Phe Ile Ala Arg Lys Arg Gly Phe Thr Val Lys Met His
        50   55   60

64

```
Cys Tyr Met Asn Ser Ala Ser Gly Asn Val Ser Trp Leu Trp Lys Gln
 65                  70              75                  80

Glu Met Asp Glu Asn Pro Gln Gln Leu Lys Leu Glu Lys Gly Arg Met
                 85              90                  95

Glu Glu Ser Gln Asn Glu Ser Leu Ala Thr Leu Thr Ile Gln Gly Ile
             100             105             110

Arg Phe Glu Asp Asn Gly Ile Tyr Phe Cys Gln Gln Lys Cys Asn Asn
         115             120             125

Thr Ser Glu Val Tyr Gln Gly Cys Gly Thr Glu Leu Arg Val Met Gly
     130             135             140

Phe Ser Thr Leu Ala Gln Leu Lys Gln Arg Asn Thr Leu Lys Asp Gly
145             150             155             160

Ile Ile Met Ile Gln Thr Leu Leu Ile Ile Leu Phe Ile Ile Val Pro
             165             170             175

Ile Phe Leu Leu Leu Asp Lys Asp Asp Ser Lys Ala Gly Met Glu Glu
         180             185             190

Asp His Thr Tyr Glu Gly Leu Asp Ile Asp Gln Thr Ala Thr Tyr Glu
     195             200             205

Asp Ile Val Thr Leu Arg Thr Gly Glu Val Lys Trp Ser Val Gly Glu
     210             215             220

His Pro Gly Gln Glu
225


<210> 67
<211> 449
<212> DNA
<213> Homo sapiens

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<221> modified_base
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<223> n = g, a, c or t

<400> 67
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cctctcaagt gttgcattgt ccctgcctaa accaagaagg ctaaacaaag cccctcctgt 180
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gctttgaaat taggctcatg atgtgattcc tattatatgt acctgatttt tttaggcccc 360
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gaaatctaga gatgcatgtt tatttaatt 449


<210> 68
<211> 2359
<212> DNA
<213> Homo sapiens
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65

<400> 68
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gagtgaaatc tgaacgctgt cttatattaa gcagtagaat taggtattat cataaaaagt 420
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ctatgcacct ggtaaaaaa                                               2359
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<210> 69
<211> 240
<212> DNA
<213> Homo sapiens

<400> 69
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ggtccaattc attatgccaa agggtccgtc taggaggttc ttgttccaag tattgagatt 180
cccgagagaa gtaggtcccc ttagatagaa gcagagtttc tcagaggtat ttagcagcag 240
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<210> 70
<211> 980
<212> DNA
<213> Homo sapiens

<400> 70

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tgcttctatc taaggggacc tacttctctc gggaatctca atacttggaa caagaacctc  180
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gctacatacc ttggatagat                                               980
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<210> 71
<211> 118
<212> PRT
<213> Homo sapiens

<400> 71

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Met Asp Ser Arg Gly Ser Pro Leu Gly Gly Leu Gly Leu Pro Cys Gly
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Ala Ser Leu Arg Arg Thr Pro Ala Ser Pro Ser Asp Ala Ile Gln Arg
            20                  25                  30

Ala Leu Pro Gly Arg Lys Leu Pro Arg Trp Asn Ala Ser Pro Glu Gln
        35                  40                  45

Arg Val Ala Val Pro Cys Gly Gly Leu Thr Gln Trp Leu Asn Thr Gly
    50                  55                  60

Lys Glu Leu Ala Leu Gly Val Arg Thr Ser Glu Thr Cys Arg Leu Gly
65                  70                  75                  80

Ala Val His Gly Trp Glu Gln Leu His Gln Pro Leu Gln Ser Asp Ser
                85                  90                  95

Glu Glu Asp Asp Lys Pro Cys Ser Ser His Thr Arg Lys Leu Thr Gly
            100                 105                 110

Pro Arg Thr Ala Glu Ala
        115
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<210> 72
<211> 531
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (519)
<223> n = g, a, c or t

67

<400> 72
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tgataaaaat atttttaagc cgtgaaagtt atgagatatt ctgggtaagc ctgattatca 180
aagaatacca caaatagctt tggagatcgt gtattgtttg tcactgagtc aaagagatct 240
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taggtgtcct tggcagaata actggcatcc acagcaaaat aggttccttt tccataggat 420
acagcatttt tcccacacaa cttctattaa agccgtgctg attgacatat ggcactgagt 480
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<210> 73
<211> 1956
<212> DNA
<213> Homo sapiens

<400> 73
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ctaactggtc aagaataaat cccaacaagg ccaggattcc catggcagga gatacccaag 180
gtgtggtcgg gactgtctct aagccttgtt tcacagcata tgaaatgaaa atcggtgcaa 240
ttactttca ggttgctact ggagatatag ccactgaaca ggtagatgtt attgtaaact 300
caacagcaag gacatttaat cggaaatcag gtgtgtcaag agctatttta gaaggtgctg 360
gacaagctgt ggaaagtgaa tgtgctgtac tagctgcaca gcctcacaga gattttataa 420
ttacaccagg tggatgctta aagtgcaaaa taataattca tgttcctggg ggaaaagatg 480
tcaggaaaac ggtcaccagt gttctagaag agtgtgaaca gaggaagtac acatcggttt 540
cccttccagc cattggaaca ggaaatgccg aaaaaaaccc tatcacagtt gctgataaca 600
taatcgatgc tattgtagac ttctcatcac aacattccac cccatcatta aaaacagtta 660
aagttgtcat ttttcaacct gagctgctaa atatattcta cgacagcatg aaaaaaagag 720
acctctctgc atcactgaac tttcagtcca cattctccat gactacatgt aatcttcctg 780
aacactggac tgacatgaat catcagctgt tttgcatggt ccagctagag ccaggacaat 840
cagaatataa taccataaag gacaagttca cccgaacttg ttcttcctac gcaatagaga 900
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ccttattaag gaaaacttgt caatagttca gctgaaatga ctgaatcaca gaatattaac 1860
tctgttatgg aacaaatcat aacagatttt acctgtttac atttcaggta aaaatgtatc 1920
gcattgttat ctaatattaa aaaattaccc ccaatt 1956

<210> 74
<211> 444
<212> PRT
<213> Homo sapiens

<400> 74
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 1   5   10   15

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            20              25              30

Ser Arg Ile Asn Pro Asn Lys Ala Arg Ile Pro Met Ala Gly Asp Thr
            35              40              45

Gln Gly Val Val Gly Thr Val Ser Lys Pro Cys Phe Thr Ala Tyr Glu
    50              55              60

Met Lys Ile Gly Ala Ile Thr Phe Gln Val Ala Thr Gly Asp Ile Ala
65              70              75              80

Thr Glu Gln Val Asp Val Ile Val Asn Ser Thr Ala Arg Thr Phe Asn
            85              90              95

Arg Lys Ser Gly Val Ser Arg Ala Ile Leu Glu Gly Ala Gly Gln Ala
            100             105             110

Val Glu Ser Glu Cys Ala Val Leu Ala Ala Gln Pro His Arg Asp Phe
    115             120             125

Ile Ile Thr Pro Gly Gly Cys Leu Lys Cys Lys Ile Ile Ile His Val
    130             135             140

Pro Gly Gly Lys Asp Val Arg Lys Thr Val Thr Ser Val Leu Glu Glu
145             150             155             160

Cys Glu Gln Arg Lys Tyr Thr Ser Val Ser Leu Pro Ala Ile Gly Thr
            165             170             175

Gly Asn Ala Gly Lys Asn Pro Ile Thr Val Ala Asp Asn Ile Ile Asp
            180             185             190

Ala Ile Val Asp Phe Ser Ser Gln His Ser Thr Pro Ser Leu Lys Thr
            195             200             205

Val Lys Val Val Ile Phe Gln Pro Glu Leu Leu Asn Ile Phe Tyr Asp
    210             215             220

Ser Met Lys Lys Arg Asp Leu Ser Ala Ser Leu Asn Phe Gln Ser Thr
225             230             235             240

Phe Ser Met Thr Thr Cys Asn Leu Pro Glu His Trp Thr Asp Met Asn
            245             250             255

His Gln Leu Phe Cys Met Val Gln Leu Glu Pro Gly Gln Ser Glu Tyr
            260             265             270

Asn Thr Ile Lys Asp Lys Phe Thr Arg Thr Cys Ser Ser Tyr Ala Ile
    275             280             285

Glu Lys Ile Glu Arg Ile Gln Asn Ala Phe Leu Trp Gln Ser Tyr Gln
    290             295             300

Val Lys Lys Arg Gln Met Asp Ile Lys Asn Asp His Lys Asn Asn Glu
305             310             315             320

Arg Leu Leu Phe His Gly Thr Asp Ala Asp Ser Val Pro Tyr Val Asn
            325             330             335
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69

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Gln His Gly Phe Asn Arg Ser Cys Ala Gly Lys Asn Ala Val Ser Tyr
            340                 345                 350

Gly Lys Gly Thr Tyr Phe Ala Val Asp Ala Ser Tyr Ser Ala Lys Asp
            355                 360                 365

Thr Tyr Ser Lys Pro Asp Ser Asn Gly Arg Lys His Met Tyr Val Val
    370                 375                 380

Arg Val Leu Thr Gly Val Phe Thr Lys Gly Arg Ala Gly Leu Val Thr
385                 390                 395                 400

Pro Pro Pro Lys Asn Pro His Asn Pro Thr Asp Leu Phe Asp Ser Val
            405                 410                 415

Thr Asn Asn Thr Arg Ser Pro Lys Leu Phe Val Val Phe Phe Asp Asn
            420                 425                 430

Gln Ala Tyr Pro Glu Tyr Leu Ile Thr Phe Thr Ala
            435                 440


<210> 75
<211> 449
<212> DNA
<213> Homo sapiens

<400> 75
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caggagaaca gagaaaaaac cagcctgtct ccaaactggc ccgtctcagg gactggggc 180
ctttaccccc agtgaaagat gcagacttta cagcgctgca gtacagtaga gtcaagtgac 240
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aagtgctttc cacctatcat gttaccttct aactactccc ttggttggat acaggtatta 360
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aacagctctt ccttacagaa ggatcccaa                                  449


<210> 76
<211> 79
<212> PRT
<213> Homo sapiens

<400> 76
Arg Ser His Leu Thr Leu Leu Tyr Cys Ser Ala Val Lys Ser Ala Ser
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Phe Thr Gly Gly Lys Gly Pro Gln Ser Leu Arg Arg Ala Ser Leu Glu
            20                  25                  30

Thr Gly Trp Phe Phe Leu Cys Ser Pro Glu Ser Pro Ser Asp Glu Lys
            35                  40                  45

Gly Gly Leu Glu Thr Glu Cys Gln Lys Pro Ile Lys Gly Thr Ala Leu
    50                  55                  60

His Phe Arg Glu Gly Ala Gly Leu Glu Lys Asn Gln Arg Ser Ser
65                  70                  75
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70

<210> 77
<211> 3067
<212> DNA
<213> Homo sapiens

<400> 77
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gaagccagtc actaagcgag gtcaaactcc aggacagggg aattaagtgc caccttctgg 180
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aaaaaaa   3067

<210> 78
<211> 554
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (1)..(554)
<223> n = g, a, c or t

<400> 78
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atagagtaat tgcattattt gaaaattctn tcattttaca atgcacttca ccaatgaaac 180
agntaatttc cattttgaaa attaaaagaa aacagcacag agaagttaaa tgcggtgtag 240
caaagttatg gggtctgctt gagggcacta acctcaacag attattcctc ctctccttag 300
aataaccatg aaaatacaaa tttacttagc acattttgc tttttaagta gctggttcat 360
tttctgaatt tcccacattc agagttccag tcattattgt tacatcatgt ttgcagaaac 420
cttgtcttat ttagtgtcta tttgcatata accctgaaaa cattattatt tgaaaacttt 480
tctatatctc aaattaatat acattttcat aacctacctt tgnattaaga cttgcaattt 540
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<210> 79
<211> 3243
<212> DNA
<213> Homo sapiens

<400> 79
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<211> 755
<212> PRT
<213> Homo sapiens

<400> 80

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Glu Asn Phe Ser Phe Arg His Leu Glu Leu Leu Asn Leu Thr Ser Tyr
        35                  40                  45

Lys Cys Lys Leu Leu Ile Leu Ser Asn Ser Leu Leu Arg Asp Leu Thr
    50                  55                  60

Pro Lys Lys Cys Gln Phe Leu Glu Lys Ile Leu His Ser Pro Lys Ser
65                  70                  75                  80

Val Val Thr Leu Leu Cys Gly Val Lys Ser Ser Asp Gln Leu Tyr Glu
                85                  90                  95

Leu Leu Asn Ile Ser Gln Ser Arg Trp Glu Ile Ser Thr Glu Gln Glu
            100                 105                 110

Pro Glu Asp Tyr Ile Ser Val Ile Gln Ser Ile Ile Phe Lys Asp Ser
            115                 120                 125

Glu Asp Tyr Phe Glu Val Asn Ile Pro Thr Asp Leu Arg Ala Lys His
        130                 135                 140

Ser Gly Glu Ile Ser Glu Arg Lys Glu Ile Glu Glu Leu Ser Glu Ala
145                 150                 155                 160
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Ser Arg Asn Thr Ile Pro Leu Ala Val Val Leu Pro Thr Glu Ile Pro
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Cys Glu Asn Pro Gly Glu Ile Phe Ile Ile Leu Arg Asp Glu Val Ile
             180              185              190

Gly Asp Thr Val Glu Val Glu Phe Thr Ser Ser Asn Lys Arg Ile Arg
             195              200              205

Thr Arg Pro Ala Leu Trp Asn Lys Lys Val Trp Cys Met Lys Ala Leu
     210              215              220

Glu Phe Pro Ala Gly Ser Val His Val Asn Val Tyr Cys Asp Gly Ile
225              230              235              240

Val Lys Ala Thr Thr Lys Ile Lys Tyr Tyr Pro Thr Ala Lys Ala Lys
             245              250              255

Glu Cys Leu Phe Arg Met Ala Asp Ser Gly Glu Ser Leu Cys Gln Asn
             260              265              270

Ser Ile Glu Glu Leu Asp Gly Val Leu Thr Ser Ile Phe Lys His Glu
             275              280              285

Ile Pro Tyr Tyr Glu Phe Gln Ser Leu Gln Thr Glu Ile Cys Ser Gln
     290              295              300

Asn Lys Tyr Thr His Phe Lys Glu Leu Pro Thr Leu Leu His Cys Ala
305              310              315              320

Ala Lys Phe Gly Leu Lys Asn Leu Ala Ile His Leu Leu Gln Cys Ser
             325              330              335

Gly Ala Thr Trp Ala Ser Lys Met Lys Asn Met Glu Gly Ser Asp Pro
             340              345              350

Ala His Ile Ala Glu Arg His Gly His Lys Glu Leu Lys Lys Ile Phe
             355              360              365

Glu Asp Phe Ser Ile Gln Glu Ile Asp Ile Asn Asn Glu Gln Glu Asn
     370              375              380

Asp Tyr Glu Glu Asp Ile Ala Ser Phe Ser Thr Tyr Ile Pro Ser Thr
385              390              395              400

Gln Asn Pro Ala Phe His His Glu Ser Arg Lys Thr Tyr Gly Gln Ser
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Ala Asp Gly Ala Glu Ala Asn Glu Met Glu Gly Glu Gly Lys Gln Asn
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Gly Ser Gly Met Glu Thr Lys His Ser Pro Leu Glu Val Gly Ser Glu
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Ser Ser Glu Asp Gln Tyr Asp Asp Leu Tyr Val Phe Ile Pro Gly Ala
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Asp Pro Glu Asn Asn Ser Gln Glu Pro Leu Met Ser Ser Arg Pro Pro
465              470              475              480
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74

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Leu Pro Pro Pro Arg Pro Val Ala Asn Ala Phe Gln Leu Glu Arg Pro
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His Phe Thr Leu Pro Gly Thr Met Val Glu Gly Gln Met Glu Arg Ser
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Gln Asn Trp Gly His Pro Gly Val Arg Gln Glu Thr Gly Asp Glu Pro
            515             520             525

Lys Gly Glu Lys Glu Lys Lys Glu Glu Glu Lys Glu Gln Glu Glu Glu
        530             535             540

Glu Asp Pro Tyr Thr Phe Ala Glu Ile Asp Asp Ser Glu Tyr Asp Met
545             550             555             560

Ile Leu Ala Asn Leu Ser Ile Lys Lys Lys Thr Gly Ser Arg Ser Phe
                565             570             575

Ile Ile Asn Arg Pro Pro Ala Pro Thr Pro Arg Pro Thr Ser Ile Pro
            580             585             590

Pro Lys Glu Glu Thr Thr Pro Tyr Ile Ala Gln Val Phe Gln Gln Lys
        595             600             605

Thr Ala Arg Arg Gln Ser Asp Asp Asp Lys Phe Arg Gly Leu Pro Lys
    610             615             620

Lys Gln Asp Arg Ala Arg Ile Glu Ser Pro Ala Phe Ser Thr Leu Arg
625             630             635             640

Gly Cys Leu Thr Asp Gly Gln Glu Glu Leu Ile Leu Leu Gln Glu Lys
            645             650             655

Val Lys Asn Gly Lys Met Ser Met Asp Glu Ala Leu Glu Lys Phe Lys
            660             665             670

His Trp Gln Met Gly Lys Ser Gly Leu Glu Met Ile Gln Gln Glu Lys
        675             680             685

Leu Arg Gln Leu Arg Asp Cys Ile Ile Gly Lys Arg Pro Glu Glu Glu
    690             695             700

Asn Val Tyr Asn Lys Leu Thr Ile Val His His Pro Gly Gly Lys Glu
705             710             715             720

Thr Ala His Asn Glu Asn Lys Phe Tyr Asn Val His Phe Ser Asn Lys
            725             730             735

Leu Pro Ala Arg Pro Gln Val Glu Lys Glu Phe Gly Phe Cys Cys Lys
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Lys Asp His
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<210> 81
<211> 3195
<212> DNA
<213> Homo sapiens
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<400> 81

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<211> 816
<212> PRT
<213> Homo sapiens

<400> 82

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            20              25              30

Leu Pro Ala Ala Pro Gly Lys Gly Leu Gly Ser Pro Asp Pro Ala Pro
        35              40              45

Cys Gly Pro Ala Pro Pro Gly Asn Thr Lys Asp Ile Ile Met Ile Tyr
    50              55              60

Glu Glu Asp Ala Glu Glu Trp Ala Leu Tyr Leu Thr Glu Val Phe Leu
65              70              75              80

His Val Val Lys Arg Glu Ala Ile Leu Leu Tyr Arg Leu Glu Asn Phe
            85              90              95

Ser Phe Arg His Leu Glu Leu Leu Asn Leu Thr Ser Tyr Lys Cys Lys
            100             105             110

Leu Leu Ile Leu Ser Asn Ser Leu Leu Arg Asp Leu Thr Pro Lys Lys
        115             120             125

Cys Gln Phe Leu Glu Lys Ile Leu His Ser Pro Lys Ser Val Val Thr
    130             135             140

Leu Leu Cys Gly Val Lys Ser Ser Asp Gln Leu Tyr Glu Leu Leu Asn
145             150             155             160

Ile Ser Gln Ser Arg Trp Glu Ile Ser Thr Glu Gln Glu Pro Glu Asp
            165             170             175

Tyr Ile Ser Val Ile Gln Ser Ile Ile Phe Lys Asp Ser Glu Asp Tyr
        180             185             190

Phe Glu Val Asn Ile Pro Thr Asp Leu Arg Ala Lys His Ser Gly Glu
        195             200             205

Ile Ser Glu Arg Lys Glu Ile Glu Glu Leu Ser Glu Ala Ser Arg Asn
    210             215             220

Thr Ile Pro Leu Ala Val Val Leu Pro Thr Glu Ile Pro Cys Glu Asn
225             230             235             240

Pro Gly Glu Ile Phe Ile Ile Leu Arg Asp Glu Val Ile Gly Asp Thr
            245             250             255

Val Glu Val Glu Phe Thr Ser Ser Asn Lys Arg Ile Arg Thr Arg Pro
            260             265             270

Ala Leu Trp Asn Lys Lys Val Trp Cys Met Lys Ala Leu Glu Phe Pro
        275             280             285

Ala Gly Ser Val His Val Asn Val Tyr Cys Asp Gly Ile Val Lys Ala
    290             295             300

Thr Thr Lys Ile Lys Tyr Tyr Pro Thr Ala Lys Ala Lys Glu Cys Leu
305             310             315             320
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77

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Phe Arg Met Ala Asp Ser Gly Glu Ser Leu Cys Gln Asn Ser Ile Glu
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Glu Leu Asp Gly Val Leu Thr Ser Ile Phe Lys His Glu Ile Pro Tyr
            340             345             350

Tyr Glu Phe Gln Ser Leu Gln Thr Glu Ile Cys Ser Gln Asn Lys Tyr
            355             360             365

Thr His Phe Lys Glu Leu Pro Thr Leu Leu His Cys Ala Ala Lys Phe
    370             375             380

Gly Leu Lys Asn Leu Ala Ile His Leu Leu Gln Cys Ser Gly Ala Thr
385             390             395             400

Trp Ala Ser Lys Met Lys Asn Met Glu Gly Ser Asp Pro Ala His Ile
            405             410             415

Ala Glu Arg His Gly His Lys Glu Leu Lys Lys Ile Phe Glu Asp Phe
            420             425             430

Ser Ile Gln Glu Ile Asp Ile Asn Asn Glu Gln Glu Asn Asp Tyr Glu
            435             440             445

Glu Asp Ile Ala Ser Phe Ser Thr Tyr Ile Pro Ser Thr Gln Asn Pro
    450             455             460

Ala Phe His His Glu Ser Arg Lys Thr Tyr Gly Gln Ser Ala Asp Gly
465             470             475             480

Ala Glu Ala Asn Glu Met Glu Gly Glu Gly Lys Gln Asn Gly Ser Gly
            485             490             495

Met Glu Thr Lys His Ser Pro Leu Glu Val Gly Ser Glu Ser Ser Glu
            500             505             510

Asp Gln Tyr Asp Asp Leu Tyr Val Phe Ile Pro Gly Ala Asp Pro Glu
            515             520             525

Asn Asn Ser Gln Glu Pro Leu Met Ser Ser Arg Pro Pro Leu Pro Pro
    530             535             540

Pro Arg Pro Val Ala Asn Ala Phe Gln Leu Glu Arg Pro His Phe Thr
545             550             555             560

Leu Pro Gly Thr Met Val Glu Gly Gln Met Glu Arg Ser Gln Asn Trp
            565             570             575

Gly His Pro Gly Val Arg Gln Glu Thr Gly Asp Glu Pro Lys Gly Glu
            580             585             590

Lys Glu Lys Lys Glu Glu Glu Lys Glu Gln Glu Glu Glu Glu Asp Pro
            595             600             605

Tyr Thr Phe Ala Glu Ile Asp Asp Ser Glu Tyr Asp Met Ile Leu Ala
    610             615             620

Asn Leu Ser Ile Lys Lys Lys Thr Gly Ser Arg Ser Phe Ile Ile Asn
625             630             635             640
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78

Arg Pro Pro Ala Pro Thr Pro Arg Pro Thr Ser Ile Pro Pro Lys Glu
            645   650   655

Glu Thr Thr Pro Tyr Ile Ala Gln Val Phe Gln Gln Lys Thr Ala Arg
            660   665   670

Arg Gln Ser Asp Asp Asp Lys Phe Arg Gly Leu Pro Lys Lys Gln Asp
            675   680   685

Arg Ala Arg Ile Glu Ser Pro Ala Phe Ser Thr Leu Arg Gly Cys Leu
    690   695   700

Thr Asp Gly Gln Glu Glu Leu Ile Leu Leu Gln Glu Lys Val Lys Asn
705   710   715   720

Gly Lys Met Ser Met Asp Glu Ala Leu Glu Lys Phe Lys His Trp Gln
            725   730   735

Met Gly Lys Ser Gly Leu Glu Met Ile Gln Gln Glu Lys Leu Arg Gln
            740   745   750

Leu Arg Asp Cys Ile Ile Gly Lys Arg Pro Glu Glu Glu Asn Val Tyr
            755   760   765

Asn Lys Leu Thr Ile Val His His Pro Gly Gly Lys Glu Thr Ala His
    770   775   780

Asn Glu Asn Lys Phe Tyr Asn Val His Phe Ser Asn Lys Leu Pro Ala
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Arg Pro Gln Val Glu Lys Glu Phe Gly Phe Cys Cys Lys Lys Asp His
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<212> DNA
<213> Homo sapiens

<400> 83
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79

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<213> Homo sapiens

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Phe Leu His Val Val Lys Arg Glu Ala Ile Leu Leu Tyr Arg Leu Glu
            35                  40                  45

Asn Phe Ser Phe Arg His Leu Glu Leu Leu Asn Leu Thr Ser Tyr Lys
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Cys Lys Leu Leu Ile Leu Ser Asn Ser Leu Leu Arg Asp Leu Thr Pro
 65                  70                  75                  80
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80

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Lys Lys Cys Gln Phe Leu Glu Lys Ile Leu His Ser Pro Lys Ser Val
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Val Thr Leu Leu Cys Gly Val Lys Ser Ser Asp Gln Leu Tyr Glu Leu
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Leu Asn Ile Ser Gln Ser Arg Trp Glu Ile Ser Thr Glu Gln Glu Pro
              115             120             125

Glu Asp Tyr Ile Ser Val Ile Gln Ser Ile Ile Phe Lys Asp Ser Glu
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Asp Tyr Phe Glu Val Asn Ile Pro Thr Asp Leu Arg Ala Lys His Ser
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Gly Glu Ile Ser Glu Arg Lys Glu Ile Glu Glu Leu Ser Glu Ala Ser
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Arg Asn Thr Ile Pro Leu Ala Val Val Leu Pro Thr Glu Ile Pro Cys
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Glu Asp Pro Gly Glu Ile Phe Ile Ile Leu Arg Asp Glu Val Ile Gly
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Asp Thr Val Glu Val Glu Phe Thr Ser Ser Asn Lys Arg Ile Arg Thr
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Arg Pro Ala Leu Trp Asn Lys Lys Val Trp Cys Met Lys Ala Leu Glu
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Phe Pro Ala Gly Ser Val His Val Asn Val Tyr Cys Asp Gly Ile Val
              245             250             255

Lys Ala Thr Thr Lys Ile Lys Tyr Tyr Pro Thr Ala Lys Ala Lys Glu
              260             265             270

Cys Leu Phe Arg Met Ala Asp Ser Gly Glu Ser Leu Cys Gln Asn Ser
              275             280             285

Ile Glu Glu Leu Asp Gly Val Leu Thr Ser Ile Phe Lys His Glu Ile
    290             295             300

Pro Tyr Tyr Glu Phe Gln Ser Leu Gln Thr Glu Ile Cys Ser Gln Asn
305             310             315             320

Lys Tyr Thr His Phe Lys Glu Leu Pro Thr Leu Leu His Cys Ala Ala
              325             330             335

Lys Phe Gly Leu Lys Asn Leu Ala Ile His Leu Leu Gln Cys Ser Gly
              340             345             350

Ala Thr Trp Ala Ser Lys Met Lys Asn Met Glu Gly Ser Asp Pro Thr
              355             360             365

His Ile Ala Glu Arg His Gly His Lys Glu Leu Lys Lys Ile Phe Glu
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Asp Phe Ser Ile Gln Glu Ile Asp Ile Asn Asn Glu Gln Glu Asn Asp
385             390             395             400
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81

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Tyr Glu Glu Asp Ile Ala Ser Phe Ser Thr Tyr Ile Pro Ser Thr Gln
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Asn Pro Ala Phe His His Glu Ser Arg Lys Thr Tyr Gly Gln Ser Ala
            420             425             430

Asp Gly Ala Glu Ala Asn Glu Met Glu Gly Glu Gly Lys Gln Asn Gly
        435             440             445

Ser Gly Met Glu Thr Lys His Ser Pro Leu Glu Val Gly Ser Glu Ser
        450             455             460

Ser Glu Asp Gln Tyr Asp Asp Leu Tyr Val Phe Ile Pro Gly Ala Asp
465             470             475             480

Pro Glu Asn Asn Ser Gln Glu Pro Leu Met Ser Ser Arg Pro Pro Leu
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Pro Pro Pro Arg Pro Val Ala Asn Ala Phe Gln Leu Glu Arg Pro His
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Phe Thr Leu Pro Gly Thr Met Val Glu Gly Gln Met Glu Arg Ser Gln
        515             520             525

Asn Trp Gly His Pro Gly Val Arg Gln Glu Thr Gly Asp Glu Pro Lys
    530             535             540

Gly Glu Lys Glu Lys Lys Glu Glu Glu Lys Glu Gln Glu Glu Glu Glu
545             550             555             560

Asp Pro Tyr Thr Phe Ala Glu Ile Asp Asp Ser Glu Tyr Asp Met Ile
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Leu Ala Asn Leu Ser Ile Lys Lys Lys Thr Gly Ser Arg Ser Phe Ile
        580             585             590

Ile Asn Arg Pro Pro Ala Pro Thr Pro Arg Pro Thr Ser Ile Pro Pro
        595             600             605

Lys Glu Glu Thr Thr Pro Tyr Ile Ala Gln Val Phe Gln Gln Lys Thr
    610             615             620

Ala Arg Arg Gln Ser Asp Asp Asp Lys Phe Arg Gly Leu Pro Lys Lys
625             630             635             640

Gln Asp Arg Ala Arg Ile Glu Ser Pro Ala Phe Ser Thr Leu Arg Gly
            645             650             655

Cys Leu Thr Asp Gly Gln Glu Glu Leu Ile Leu Leu Gln Glu Lys Val
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Lys Asn Gly Lys Met Ser Met Asp Glu Ala Leu Glu Lys Phe Lys His
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Trp Gln Met Gly Lys Ser Gly Leu Glu Met Ile Gln Gln Glu Lys Leu
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Arg Gln Leu Arg Asp Cys Ile Ile Gly Lys Arg Pro Glu Glu Glu Asn
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82

Val Tyr Asn Lys Leu Thr Ile Val His His Pro Gly Gly Lys Glu Thr
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Ala His Asn Glu Asn Lys Phe Tyr Asn Val His Phe Ser Asn Lys Leu
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Pro Ala Arg Pro Gln Val Glu Lys Glu Phe Gly Phe Cys Cys Lys Lys
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Asp His
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<213> Homo sapiens

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83

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<213> Homo sapiens

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Cys Asn Asp Thr Val Val Ile Pro Cys Phe Val Thr Asn Met Glu Ala
            35   40   45

Gln Asn Thr Thr Glu Val Tyr Val Lys Trp Lys Phe Lys Gly Arg Asp
    50   55   60

Ile Tyr Thr Phe Asp Gly Ala Leu Asn Lys Ser Thr Val Pro Thr Asp
 65   70   75   80

Phe Ser Ser Ala Lys Ile Glu Val Ser Gln Leu Leu Lys Gly Asp Ala
                85   90   95

Ser Leu Lys Met Asp Lys Ser Asp Ala Val Ser His Thr Gly Asn Tyr
            100   105   110

Thr Cys Glu Val Thr Glu Leu Thr Arg Glu Gly Glu Thr Ile Ile Glu
            115   120   125

Leu Lys Tyr Arg Val Val Ser Trp Phe Ser Pro Asn Glu Asn Ile Leu
    130   135   140

Ile Val Ile Phe Pro Ile Phe Ala Ile Leu Leu Phe Trp Gly Gln Phe
145   150   155   160

Gly Ile Lys Thr Leu Lys Tyr Arg Ser Gly Gly Met Asp Glu Lys Thr
            165   170   175

Ile Ala Leu Leu Val Ala Gly Leu Val Ile Thr Val Ile Val Ile Val
            180   185   190

Gly Ala Ile Leu Phe Val Pro Gly Glu Tyr Ser Leu Lys Asn Ala Thr
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Gly Leu Gly Leu Ile Val Thr Ser Thr Gly Ile Leu Ile Leu Leu His
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Tyr Tyr Val Phe Ser Thr Ala Ile Gly Leu Thr Ser Phe Val Ile Ala
225   230   235   240

Ile Leu Val Ile Gln Val Ile Ala Tyr Ile Leu Ala Val Val Gly Leu
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Ser Leu Cys Ile Ala Ala Cys Ile Pro Met His Gly Pro Leu Leu Ile
            260   265   270

Ser Gly Leu Ser Ile Leu Ala Leu Ala Gln Leu Leu Gly Leu Val Tyr
    275   280   285

Met Lys Phe Val Ala Ser Asn Gln Lys Thr Ile Gln Pro Pro Arg Asn
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Asn
305

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<213> Homo sapiens

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86

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87

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<211> 1209
<212> DNA
<213> Homo sapiens

<400> 91
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89

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91

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<210> 94
<211> 1364
<212> DNA
<213> Homo sapiens

<400> 94
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tcatctaaaa tttggtcaag gggagggtct ttcttggtcc ctcctcttgt tcaagggaaa 180
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tcatggattt tctggtttgc agtttgaatg tccttggtga tggcatagac atcagtgtca 420
cagtcatggt tattttttccg agcagagtgt agaagtgtcc aacttcatct tgaagggctt 480
ctttagrcag tcacaataaa gatctgggaa gttaggtttt agttctcagt gatgccaaat 540
caggacagtg ggagaaaaat taaaaacctc agtttggaga gtggtagcca gatagtaaag 600
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cgttcaattt acaagtagat aacaaaacct gaaagacaag tacaggacca gaataataac 720
ccataagaag gtgctatagt ttttataaaa tatctttcta cagtcatccc ccttttttga 780
tccaaattaa ccaaagtaag attattcttg tttacaaaat aagtcttgtc tcattatatt 840
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gtcgatcagg ctgggagctg cagaccggag ctgttcctat tcggccatct tggaatggac 1320
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<210> 95
<211> 411
<212> DNA
<213> Homo sapiens

<400> 95
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ttggcataaa gttagaaaaa cagatcaatg aagcagaaga gagagtccag aaacagaact 120
gcacatttat gtgttggtga atgccaggga ttcagcttag gtctgattgc tcaccacaca 180
gaaagccaat cactgagaca acaagtactg ccaggaagaa aggctttatt gctggtgatg 240
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ccagccagga tatgggagac aagtctaaaa tctgtctctg taaccaataa agttaggagt 300
ttatgtagga gttgctcaac aggcagtagg tagttgaatc agggttctgg caccttgctg 360
ttaggatgca gcgatctgga aatcttcagc tttctgatac tatctgggag g           411


<210> 96
<211> 1632
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (1)..(1632)
<223> n = g, a, c or t

<400> 96
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tctttatgca tttttttttaa tttaaaatgt ggggtaggga tctaactttt ttcaaacaca 180
tataaatgtg cactactatt tatttaaata gtctgttctt ttcccttta ttattatgct 240
atcttatctc acttgaattc aacctaagcc tgttttagac tccaactaat actacagatc 300
ttcctaccac tcttcccctt gcataattaa cttcaagcac attagcctcc gggttcctca 360
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ctgtttctgg tccatggaca ttttattttt ctttttatag aacaaacaca gctttttttac 540
attttgtatt tttcctgcca ttgctatgtg cttggagctc agggagggcc tcaaaggatg 600
aaattggagt atggtgtgat cagaagtttg aacttctttg tattgtatga tcatcccttt 660
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atttctttct tcatgaactt aaacgttccc atcattttg atagggtctg tgagtttatt 780
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attaattaaa attatttgca taaaatgctt aagacagggc ctgaaatgac attgagtcct 1560
caaaaaataa attattatta tcattccttc aaaaaaaaaa aaaaaaaaaa aaaaaaana 1620
aaaaaaanac ca                                                       1632


<210> 97
<211> 2378
<212> DNA
<213> Homo sapiens

<400> 97
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gccagtccag ggagaggaca gagccaatgg actggggtgt actgtaacag ccctgctggc 180
gagagggacc agggcaccgt cctccaggga gcccatgctg caagtcgggc cagaggtgcc 240
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cagttggaag cagccgatcc agcctgcgga gcctgtgggg caggtaaggg gcaagagata 480
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93

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tttttcttca tttctgagtt ttctggcgcc acttaaattt tcaccagggt cagtgcctca 720
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<210> 98
<211> 313
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (1)..(313)
<223> n = g, a, c or t

<400> 98
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tataaactat taggttggtg caaaactaat tgtggttttt gccattgaaa tggcattgaa 180
ataaaagtgt aaagaaatct ataccagatg tagtaacagt ggtttggttc tgggaggttg 240
gattacaggg agcatttgat ttctatgttg ngtatttcta tantgtttga attgtttaga 300
atgaatctgt ntt                                                     313


<210> 99
<211> 317
<212> DNA
<213> Homo sapiens

<400> 99
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ggccccgacc acagcttata agaagacgac gcccatagaa gccgcttcta gtggtgcccg 120
tgggctgaag gcgaaatttg agtccatggc tgaggagaag aggaagcgag aggaagagga 180
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94

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gaaggcacag caggtggcca ggaggcaaca ggagcgaaag gctgtgacaa agaggagccc 240
tgaggctcca cagccagtga tagctatgga agagccagca gtaccggccc cactgcccaa 300
gaaaatctcc tcagagg                                                 317
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<210> 100
<211> 1968
<212> DNA
<213> Homo sapiens

<400> 100
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aagagcgctg tcggcttcaa tgaaatggag gccccgacca cagcttataa gaagacgacg 720
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gcccactttc cttccctgaa gaaatatctg tgaaccttct ttctgttcag tcctaaaatt 1920
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<210> 101
<211> 486
<212> PRT
<213> Homo sapiens

<400> 101
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Met Trp Lys Ser Val Val Gly His Asp Val Ser Val Ser Val Glu Thr
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Gln Gly Asp Asp Trp Asp Thr Asp Pro Asp Phe Val Asn Asp Ile Ser
             20                  25                  30


Glu Lys Glu Gln Arg Trp Gly Ala Lys Thr Ile Glu Gly Ser Gly Arg
          35                  40                  45
```

```
Thr Glu His Ile Asn Ile His Gln Leu Arg Asn Lys Val Ser Glu Glu
    50                  55                  60

His Asp Val Leu Arg Lys Lys Glu Met Glu Ser Gly Pro Lys Ala Ser
65                  70                  75                      80

His Gly Tyr Gly Gly Arg Phe Gly Val Glu Arg Asp Arg Met Asp Lys
            85                  90                  95

Ser Ala Val Gly His Glu Tyr Val Ala Glu Val Glu Lys His Ser Ser
            100                 105                 110

Gln Thr Asp Ala Ala Lys Gly Phe Gly Gly Lys Tyr Gly Val Glu Arg
        115                 120                 125

Asp Arg Ala Asp Lys Ser Ala Val Gly Phe Asp Tyr Lys Gly Glu Val
    130                 135                 140

Glu Lys His Thr Ser Gln Lys Asp Tyr Ser Arg Gly Phe Gly Gly Arg
145                 150                 155                 160

Tyr Gly Val Glu Lys Asp Lys Trp Asp Lys Ala Ala Leu Gly Tyr Asp
            165                 170                 175

Tyr Lys Gly Glu Thr Glu Lys His Glu Ser Gln Arg Asp Tyr Ala Lys
        180                 185                 190

Gly Phe Gly Gly Gln Tyr Gly Ile Gln Lys Asp Arg Val Asp Lys Ser
        195                 200                 205

Ala Val Gly Phe Asn Glu Met Glu Ala Pro Thr Thr Ala Tyr Lys Lys
    210                 215                 220

Thr Thr Pro Ile Glu Ala Ala Ser Ser Gly Ala Arg Gly Leu Lys Ala
225                 230                 235                 240

Lys Phe Glu Ser Met Ala Glu Glu Lys Arg Lys Arg Glu Glu Glu Glu
            245                 250                 255

Lys Ala Gln Gln Val Ala Arg Arg Gln Gln Glu Arg Lys Ala Val Thr
        260                 265                 270

Lys Arg Ser Pro Glu Ala Pro Gln Pro Val Ile Ala Met Glu Glu Pro
        275                 280                 285

Ala Val Pro Ala Pro Leu Pro Lys Lys Ile Ser Ser Glu Ala Trp Pro
    290                 295                 300

Pro Val Gly Thr Pro Pro Ser Ser Glu Ser Glu Pro Val Arg Thr Ser
305                 310                 315                 320

Arg Glu His Pro Val Pro Leu Leu Pro Ile Arg Gln Thr Leu Pro Glu
            325                 330                 335

Asp Asn Glu Glu Pro Pro Ala Leu Pro Pro Arg Thr Leu Glu Gly Leu
            340                 345                 350

Gln Val Glu Glu Glu Pro Val Tyr Glu Ala Glu Pro Glu Pro Glu Pro
        355                 360                 365
```

96

```
Glu Pro Glu Pro Glu Pro Glu Asn Asp Tyr Glu Asp Val Glu Glu Met
    370         375             380
```

```
Asp Arg His Glu Gln Glu Asp Glu Pro Glu Gly Asp Tyr Glu Glu Val
385             390             395                 400
```

```
Leu Glu Pro Glu Asp Ser Ser Phe Ser Ser Ala Leu Ala Gly Ser Ser
            405             410             415
```

```
Gly Cys Pro Ala Gly Ala Gly Ala Gly Ala Val Ala Leu Gly Ile Ser
            420             425             430
```

```
Ala Val Ala Leu Tyr Asp Tyr Gln Gly Glu Gly Ser Asp Glu Leu Ser
            435             440             445
```

```
Phe Asp Pro Asp Asp Val Ile Thr Asp Ile Glu Met Val Asp Glu Gly
    450             455             460
```

```
Trp Trp Arg Gly Arg Cys His Gly His Phe Gly Leu Phe Pro Ala Asn
465             470             475             480
```

```
Tyr Val Lys Leu Leu Glu
                485
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<210> 102
<211> 96
<212> DNA
<213> Homo sapiens

<400> 102
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tggctctgaa atctaatttt gagtttagca aggatg                           96
```

<210> 103
<211> 349
<212> DNA
<213> Homo sapiens

<400> 103
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<210> 104
<211> 116
<212> PRT
<213> Homo sapiens

<400> 104
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Leu Ala Asp Gln Cys Leu Thr Thr Ala Leu Asn Cys Asp Gln Ala Ala
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Gln Arg Leu Glu Arg Val Arg Gly Arg Val Leu Lys Lys Phe Lys Ser
            20              25                  30
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Asp Ser Gly Leu Ala Gln Arg Arg Phe Ile Arg Gly Trp Gly Leu Cys
        35                  40                  45

Ile Phe Leu Pro Phe Val Leu Ser Gln Leu Glu Pro Gly Cys Lys Lys
        50                  55                  60

Glu Leu Pro Glu Phe Glu Gly Asp Val Leu Ala Val Gly Ser Gln Ala
 65                  70                  75                  80

Leu Thr Thr Glu Gly Ile Tyr Glu Asp Val Ile Arg Gly Cys Leu Leu
                85                  90                  95

Gln Arg Ile Asp Gln Glu Leu Lys Lys Thr Leu Gly Ala Asn Asp Val
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Ser Cys Thr Leu
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<210> 105
<211> 311
<212> DNA
<213> Homo sapiens

<220>
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<223> n = g, a, c or t

<400> 105
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<211> 5107
<212> DNA
<213> Homo sapiens

<400> 106
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99

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<210> 107
<211> 579
<212> PRT
<213> Homo sapiens

<400> 107
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Ser Met Gly Gly Arg Pro Ser Ser Pro Leu Asp Lys Gln Gln Arg Gln
             20                  25                  30

His Leu Arg Gly Gln Val Asp Thr Leu Leu Arg Asn Phe Leu Pro Cys
         35                  40                  45

Tyr Arg Gly Gln Leu Ala Ala Ser Val Leu Arg Gln Ile Ser Arg Glu
     50                  55                  60

Leu Gly Pro Gln Glu Pro Thr Gly Ser Gln Leu Leu Arg Ser Lys Lys
 65                  70                  75                  80

Leu Pro Arg Val Arg Glu His Arg Gly Pro Leu Thr Gln Leu Arg Gly
                 85                  90                  95

His Pro Pro Arg Trp Gln Pro Ile Phe Cys Val Leu Arg Gly Asp Gly
             100                 105                 110

Arg Leu Glu Trp Phe Ser His Lys Glu Glu Tyr Glu Asn Gly Gly His
         115                 120                 125

Cys Leu Gly Ser Thr Ala Leu Thr Gly Tyr Thr Leu Leu Thr Ser Gln
     130                 135                 140

Arg Glu Tyr Leu Arg Leu Leu Asp Ala Leu Cys Pro Glu Ser Leu Gly
145                 150                 155                 160

Asp His Thr Gln Glu Glu Pro Asp Ser Leu Leu Glu Val Pro Val Ser
                 165                 170                 175

Phe Pro Leu Phe Leu Gln His Pro Phe Arg Arg His Leu Cys Phe Ser
             180                 185                 190

Ala Ala Thr Arg Glu Ala Gln His Ala Trp Arg Leu Ala Leu Gln Gly
         195                 200                 205

Gly Ile Arg Leu Gln Gly Thr Val Leu Gln Arg Ser Gln Ala Pro Ala
     210                 215                 220

Ala Arg Ala Phe Leu Asp Ala Val Arg Leu Tyr Arg Gln His Gln Gly
225                 230                 235                 240
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100

His Phe Gly Asp Asp Asp Val Thr Leu Gly Ser Asp Ala Glu Val Leu
                245   250   255

Thr Ala Val Leu Met Arg Glu Gln Leu Pro Ala Leu Arg Ala Gln Thr
                260   265   270

Leu Pro Gly Leu Arg Gly Ala Gly Arg Ala Arg Ala Trp Ala Trp Thr
        275   280   285

Glu Leu Leu Asp Ala Val His Ala Ala Val Leu Ala Gly Ala Ser Ala
    290   295   300

Gly Leu Cys Ala Phe Gln Pro Glu Lys Asp Glu Leu Leu Ala Ser Leu
305   310   315   320

Glu Lys Thr Ile Arg Pro Asp Val Asp Gln Leu Leu Arg Gln Arg Ala
                325   330   335

Arg Val Ala Gly Arg Leu Arg Thr Asp Ile Arg Gly Pro Leu Glu Ser
            340   345   350

Cys Leu Arg Arg Glu Val Asp Pro Gln Leu Pro Arg Val Val Gln Thr
        355   360   365

Leu Leu Arg Thr Val Glu Ala Ser Leu Glu Ala Val Arg Thr Leu Leu
    370   375   380

Ala Gln Gly Met Asp Arg Leu Ser His Arg Leu Arg Gln Ser Pro Ser
385   390   395   400

Gly Thr Arg Leu Arg Arg Glu Val Tyr Ser Phe Gly Glu Met Pro Trp
            405   410   415

Asp Leu Ala Leu Met Gln Thr Cys Tyr Arg Glu Ala Glu Arg Ser Arg
        420   425   430

Gly Arg Leu Gly Gln Leu Ala Ala Pro Phe Gly Phe Leu Gly Met Gln
        435   440   445

Ser Leu Val Phe Gly Ala Gln Asp Leu Ala Gln Gln Leu Met Ala Asp
    450   455   460

Ala Val Ala Thr Phe Leu Gln Leu Ala Asp Gln Cys Léu Thr Thr Ala
465   470   475   480

Leu Asn Cys Asp Gln Ala Ala Gln Arg Leu Glu Arg Val Arg Gly Arg
            485   490   495

Val Leu Lys Lys Phe Lys Ser Asp Ser Gly Leu Ala Gln Arg Arg Phe
        500   505   510

Ile Arg Gly Trp Gly Leu Cys Ile Phe Leu Pro Phe Val Leu Ser Gln
        515   520   525

Leu Glu Pro Gly Cys Lys Lys Thr Glu Ser Arg Ser Val Ala Gln Ala
    530   535   540

Val Val Gln Trp Cys Asp Leu Gly Ser Leu Arg Pro Pro Pro Arg
545   550   555   560

101

Phe Lys Arg Ser Ser His Leu Gly Leu Pro Ser Ser Trp Asp Tyr Arg
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His Pro Leu

<210> 108
<211> 2917
<212> DNA
<213> Homo sapiens

<400> 108
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aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaac 2917

102

<210> 109
<211> 83
<212> PRT
<213> Homo sapiens

<400> 109
Met Glu Ser Arg Ser Val Ala Gln Ala Gly Val Gln Trp Pro Asp Leu
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Gly Ser Leu Gln Pro Leu Pro Pro Arg Phe Lys Arg Phe Phe Cys Leu
                20   25   30

Ser Leu Gln Ser Ser Trp Asp Tyr Arg His Ala Pro Pro Arg Pro Ala
            35   40   45

Asn Phe Val Phe Leu Val Glu Thr Gly Phe Cys His Val Ser Gln Ala
        50   55   60

Gly Leu Glu Leu Leu Thr Ser Ser Asp Pro Pro Pro Arg Pro Pro Lys
 65   70   75   80

Val Leu Arg

<210> 110
<211> 509
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (467)
<223> n = g, a, c or t

<400> 110
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tgaacaaaaa agctatacat gtaggtgcat atttatctcc tcctgagttg ggagaaatct 180
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aatatagaca aaggtggtaa acaggtggtt ctcagagaag ataaatacat gattatttaa 360
cataaaaaga aatgttcaat gtttctagaa gacaaataat tacaaaccta aacaaattgt 420
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tggtaaaata tttctggaag acaatttgg 509

<210> 111
<211> 525
<212> DNA
<213> Homo sapiens

<400> 111
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103

<210> 112
<211> 183
<212> DNA
<213> Homo sapiens

<220>
<221> modified_base
<222> (1)..(183)
<223> n = g, a, c or t

<400> 112
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ctt   183

<210> 113
<211> 1750
<212> DNA
<213> Homo sapiens

<400> 113
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<210> 114
<211> 547
<212> PRT
<213> Homo sapiens

104

<400> 114

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Leu Leu Val Cys Cys Leu Leu Thr Pro Gly Val Gln Gly Gln Glu Phe
            20                  25              30

Leu Leu Arg Val Glu Pro Gln Asn Pro Val Leu Ser Ala Gly Gly Ser
          35                  40              45

Leu Phe Val Asn Cys Ser Thr Asp Cys Pro Ser Ser Glu Lys Ile Ala
      50                  55                  60

Leu Glu Thr Ser Leu Ser Lys Glu Leu Val Ala Ser Gly Met Gly Trp
 65                  70                  75                  80

Ala Ala Phe Asn Leu Ser Asn Val Thr Gly Asn Ser Arg Ile Leu Cys
              85                  90                  95

Ser Val Tyr Cys Asn Gly Ser Gln Ile Thr Gly Ser Ser Asn Ile Thr
            100                 105                 110

Val Tyr Gly Leu Pro Glu Arg Val Glu Leu Ala Pro Leu Pro Pro Trp
        115                 120                 125

Gln Pro Val Gly Gln Asn Phe Thr Leu Arg Cys Gln Val Glu Gly Gly
    130                 135                 140

Ser Pro Arg Thr Ser Leu Thr Val Val Leu Leu Arg Trp Glu Glu Glu
145                 150                 155                 160

Leu Ser Arg Gln Pro Ala Val Glu Glu Pro Ala Glu Val Thr Ala Thr
            165                 170                 175

Val Leu Ala Ser Arg Asp Asp His Gly Ala Pro Phe Ser Cys Arg Thr
            180                 185                 190

Glu Leu Asp Met Gln Pro Gln Gly Leu Gly Leu Phe Val Asn Thr Ser
        195                 200                 205

Ala Pro Arg Gln Leu Arg Thr Phe Val Leu Pro Val Thr Pro Pro Arg
    210                 215                 220

Leu Val Ala Pro Arg Phe Leu Glu Val Glu Thr Ser Trp Pro Val Asp
225                 230                 235                 240

Cys Thr Leu Asp Gly Leu Phe Pro Ala Ser Glu Ala Gln Val Tyr Leu
            245                 250                 255

Ala Leu Gly Asp Gln Met Leu Asn Ala Thr Val Met Asn His Gly Asp
            260                 265                 270

Thr Leu Thr Ala Thr Ala Thr Ala Thr Ala Arg Ala Asp Gln Glu Gly
        275                 280                 285

Ala Arg Glu Ile Val Cys Asn Val Thr Leu Gly Gly Glu Arg Arg Glu
    290                 295                 300

Ala Arg Glu Asn Leu Thr Val Phe Ser Phe Leu Gly Pro Ile Val Asn
305                 310                 315                 320
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105

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Leu Ser Glu Pro Thr Ala His Glu Gly Ser Thr Val Thr Val Ser Cys
            325                 330                 335

Met Ala Gly Ala Arg Val Gln Val Thr Leu Asp Gly Val Pro Ala Ala
            340                 345                 350

Ala Pro Gly Gln Pro Ala Gln Leu Gln Leu Asn Ala Thr Glu Ser Asp
        355                 360                 365

Asp Gly Arg Ser Phe Phe Cys Ser Ala Thr Leu Glu Val Asp Gly Glu
    370                 375                 380

Phe Leu His Arg Asn Ser Ser Val Gln Leu Arg Val Leu Tyr Gly Pro
385                 390                 395                 400

Lys Ile Asp Arg Ala Thr Cys Pro Gln His Leu Lys Trp Lys Asp Lys
            405                 410                 415

Thr Arg His Val Leu Gln Cys Gln Ala Arg Gly Asn Pro Tyr Pro Glu
            420                 425                 430

Leu Arg Cys Leu Lys Glu Gly Ser Ser Arg Glu Val Pro Val Gly Ile
        435                 440                 445

Pro Phe Phe Val Asn Val Thr His Asn Gly Thr Tyr Gln Cys Gln Ala
    450                 455                 460

Ser Ser Ser Arg Gly Lys Tyr Thr Leu Val Val Val Met Asp Ile Glu
465                 470                 475                 480

Ala Gly Ser Ser His Phe Val Pro Val Phe Val Ala Val Leu Leu Thr
            485                 490                 495

Leu Gly Val Val Thr Ile Val Leu Ala Leu Met Tyr Val Phe Arg Glu
        500                 505                 510

His Gln Arg Ser Gly Ser Tyr His Val Arg Glu Glu Ser Thr Tyr Leu
        515                 520                 525

Pro Leu Thr Ser Met Gln Pro Thr Glu Ala Met Gly Glu Glu Pro Ser
    530                 535                 540

Arg Ala Glu
545


<210> 115
<211> 275
<212> DNA
<213> Homo sapiens

<400> 115
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tgtctattca ctcctgaata tcaaatataa gagctggtac tcctggttaa tcaacagctt 180
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106

<210> 116
<211> 2040
<212> DNA
<213> Homo sapiens

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<210> 117
<211> 538
<212> PRT
<213> Homo sapiens

<400> 117
Met Trp Ser Gly Arg Ser Ser Phe Thr Ser Leu Val Val Gly Val Phe
 1   5   10   15

Val Val Tyr Val Val His Thr Cys Trp Val Met Tyr Gly Ile Val Tyr
             20   25   30

Thr Arg Pro Cys Ser Gly Asp Ala Asn Cys Ile Gln Pro Tyr Leu Ala
         35   40   45

Arg Arg Pro Lys Leu Gln Leu Ser Val Tyr Thr Thr Thr Arg Ser His
     50   55   60   ·

107

```
Leu Gly Ala Glu Asn Asn Ile Asp Leu Val Leu Asn Val Glu Asp Phe
 65              70              75              80

Asp Val Glu Ser Lys Phe Glu Arg Thr Val Asn Val Ser Val Pro Lys
             85              90              95

Lys Thr Arg Asn Asn Gly Thr Leu Tyr Ala Tyr Ile Phe Leu His His
            100             105             110

Ala Gly Val Leu Pro Trp His Asp Gly Lys Gln Val His Leu Val Ser
            115             120             125

Pro Leu Thr Thr Tyr Met Val Pro Lys Pro Glu Glu Ile Asn Leu Leu
    130             135             140

Thr Gly Glu Ser Asp Thr Gln Gln Ile Glu Ala Glu Lys Lys Pro Thr
145             150             155             160

Ser Ala Leu Asp Glu Pro Val Ser His Trp Arg Pro Arg Leu Ala Leu
            165             170             175

Asn Val Met Ala Asp Asn Phe Val Phe Asp Gly Ser Ser Leu Pro Ala
            180             185             190

Asp Val His Arg Tyr Met Lys Met Ile Gln Leu Gly Lys Thr Val His
            195             200             205

Tyr Leu Pro Ile Leu Phe Ile Asp Gln Leu Ser Asn Arg Val Lys Asp
    210             215             220

Leu Met Val Ile Asn Arg Ser Thr Thr Glu Leu Pro Leu Thr Val Ser
225             230             235             240

Tyr Asp Lys Val Ser Leu Gly Arg Leu Arg Phe Trp Ile His Met Gln
            245             250             255

Asp Ala Val Tyr Ser Leu Gln Gln Phe Gly Phe Ser Glu Lys Asp Ala
            260             265             270

Asp Glu Val Lys Gly Ile Phe Val Asp Thr Asn Leu Tyr Phe Leu Ala
            275             280             285

Leu Thr Phe Phe Val Ala Ala Phe His Leu Leu Phe Asp Phe Leu Ala
    290             295             300

Phe Lys Asn Asp Ile Ser Phe Trp Lys Lys Lys Ser Met Ile Gly
305             310             315             320

Met Ser Thr Lys Ala Val Leu Trp Arg Cys Phe Ser Thr Val Val Ile
            325             330             335

Phe Leu Phe Leu Leu Asp Glu Gln Thr Ser Leu Leu Val Leu Val Pro
            340             345             350

Ala Gly Val Gly Ala Ala Ile Glu Leu Trp Lys Val Lys Lys Ala Leu
            355             360             365

Lys Met Thr Ile Phe Trp Arg Gly Leu Met Pro Glu Phe Gln Phe Gly
    370             375             380
```

```
Thr Tyr Ser Glu Ser Glu Arg Lys Thr Glu Glu Tyr Asp Thr Gln Ala
385             390             395                 400

Met Lys Tyr Leu Ser Tyr Leu Leu Tyr Pro Leu Cys Val Gly Gly Ala
                405             410             415

Val Tyr Ser Leu Leu Asn Ile Lys Tyr Lys Ser Trp Tyr Ser Trp Leu
            420             425             430

Ile Asn Ser Phe Val Asn Gly Val Tyr Ala Phe Gly Phe Leu Phe Met
            435             440             445

Leu Pro Gln Leu Phe Val Asn Tyr Lys Leu Lys Ser Val Ala His Leu
    450             455             460

Pro Trp Lys Ala Phe Thr Tyr Lys Ala Phe Asn Thr Phe Ile Asp Asp
465             470             475                 480

Val Phe Ala Phe Ile Ile Thr Met Pro Thr Ser His Arg Leu Ala Cys
            485             490             495

Phe Arg Asp Asp Val Val Phe Leu Val Tyr Leu Tyr Gln Arg Trp Leu
        500             505             510

Tyr Pro Val Asp Lys Arg Arg Val Asn Glu Phe Gly Glu Ser Tyr Glu
        515             520             525

Glu Lys Ala Thr Arg Ala Pro His Thr Asp
    530             535
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<211> 923
<212> PRT
<213> Homo sapiens

<400> 119
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Leu Tyr Ile Arg Val Val Asp Lys Val Glu Ile Gly Lys Thr Val Lys
            20   25   30

```
Ala Tyr Val Arg Val Leu Asp Leu His Lys Lys Pro Phe Leu Ala Lys
        35                  40                  45

Tyr Phe Pro Phe Met Asp Leu Lys Leu Arg Ala Ala Ser Pro Ile Ile
        50                  55                  60

Thr Leu Val Ala Leu Asp Glu Ala Leu Asp Asn Tyr Thr Ile Thr Phe
65                  70                  75                  80

Leu Ile Arg Gly Val Ala Ile Gly Gln Thr Ser Leu Thr Ala Ser Val
                85                  90                  95

Thr Asn Lys Ala Gly Gln Arg Ile Asn Ser Ala Pro Gln Gln Ile Glu
            100                 105                 110

Val Phe Pro Pro Phe Arg Leu Met Pro Arg Lys Val Thr Leu Leu Ile
        115                 120                 125

Gly Ala Thr Met Gln Val Thr Ser Glu Gly Gly Pro Gln Pro Gln Ser
    130                 135                 140

Asn Ile Leu Phe Ser Ile Ser Asn Glu Ser Val Ala Leu Val Ser Ala
145                 150                 155                 160

Ala Gly Leu Val Gln Gly Leu Ala Ile Gly Asn Gly Thr Val Ser Gly
                165                 170                 175

Leu Val Gln Ala Val Asp Ala Glu Thr Gly Lys Val Val Ile Ile Ser
            180                 185                 190

Gln Asp Leu Val Gln Val Glu Val Leu Leu Leu Arg Ala Val Arg Ile
            195                 200                 205

Arg Ala Pro Ile Met Arg Met Arg Thr Gly Thr Gln Met Pro Ile Tyr
    210                 215                 220

Val Thr Gly Ile Thr Asn His Gln Asn Pro Phe Ser Phe Gly Asn Ala
225                 230                 235                 240

Val Pro Gly Leu Thr Phe His Trp Ser Val Thr Lys Arg Asp Val Leu
                245                 250                 255

Asp Leu Arg Gly Arg His His Glu Ala Ser Ile Arg Leu Pro Ser Gln
            260                 265                 270

Tyr Asn Phe Ala Met Asn Val Leu Gly Arg Val Lys Gly Arg Thr Gly
        275                 280                 285

Leu Arg Val Val Val Lys Ala Val Asp Pro Thr Ser Gly Gln Leu Tyr
        290                 295                 300

Gly Leu Ala Arg Glu Leu Ser Asp Glu Ile Gln Val Gln Val Phe Glu
305                 310                 315                 320

Lys Leu Gln Leu Leu Asn Pro Glu Ile Glu Ala Glu Gln Ile Leu Met
            325                 330                 335

Ser Pro Asn Ser Tyr Ile Lys Leu Gln Thr Asn Arg Asp Gly Ala Ala
            340                 345                 350
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Ser Leu Ser Tyr Arg Val Leu Asp Gly Pro Glu Lys Val Pro Val Val
        355   360   365

His Val Asp Glu Lys Gly Phe Leu Ala Ser Gly Ser Met Ile Gly Thr
        370   375   380

Ser Thr Ile Glu Val Ile Ala Gln Glu Pro Phe Gly Ala Asn Gln Thr
385   390   395   400

Ile Ile Val Ala Val Lys Val Ser Pro Val Ser Tyr Leu Arg Val Ser
                405   410   415

Met Ser Pro Val Leu His Thr Gln Asn Lys Glu Ala Leu Val Ala Val
            420   425   430

Pro Leu Gly Met Thr Val Thr Phe Thr Val His Phe His Asp Asn Ser
        435   440   445

Gly Asp Val Phe His Ala His Ser Ser Val Leu Asn Phe Ala Thr Asn
    450   455   460

Arg Asp Asp Phe Val Gln Ile Gly Lys Gly Pro Thr Asn Asn Thr Cys
465   470   475   480

Val Val Arg Thr Val Ser Val Gly Leu Thr Leu Leu Arg Val Trp Asp
            485   490   495

Ala Glu His Pro Gly Leu Ser Asp Phe Met Pro Leu Pro Val Leu Gln
        500   505   510

Ala Ile Ser Pro Glu Leu Ser Gly Ala Met Val Val Gly Asp Val Leu
        515   520   525

Cys Leu Ala Thr Val Leu Thr Ser Leu Glu Gly Leu Ser Gly Thr Trp
    530   535   540

Ser Ser Ser Ala Asn Ser Ile Leu His Ile Asp Pro Lys Thr Gly Val
545   550   555   560

Ala Val Ala Arg Ala Val Gly Ser Val Thr Val Tyr Tyr Glu Val Ala
            565   570   575

Gly His Leu Arg Thr Tyr Lys Glu Val Val Val Ser Val Pro Gln Arg
        580   585   590

Ile Met Ala Arg His Leu His Pro Ile Gln Thr Ser Phe Gln Glu Ala
        595   600   605

Thr Ala Ser Lys Val Ile Val Ala Val Gly Asp Arg Ser Ser Asn Leu
    610   615   620

Arg Gly Glu Cys Thr Pro Thr Gln Arg Glu Val Ile Gln Ala Leu His
625   630   635   640

Pro Glu Thr Leu Ile Ser Cys Gln Ser Gln Phe Lys Pro Ala Val Phe
            645   650   655

Asp Phe Pro Ser Gln Asp Val Phe Thr Val Glu Pro Gln Phe Asp Thr
        660   665   670

Ala Leu Gly Gln Tyr Phe Cys Ser Ile Thr Met His Arg Leu Thr Asp

Lys Gln Arg Lys His Leu Ser Met Lys Lys Thr Ala Leu Val Val Ser
    690   695   700

Ala Ser Leu Ser Ser Ser His Phe Ser Thr Glu Gln Val Gly Ala Glu
705   710   715   720

Val Pro Phe Ser Pro Gly Leu Phe Ala Asp Gln Ala Glu Ile Leu Leu
          725   730   735

Ser Asn His Tyr Thr Ser Ser Glu Ile Arg Val Phe Gly Ala Pro Glu
        740   745   750

Val Leu Glu Asn Leu Glu Val Lys Ser Gly Ser Pro Ala Val Leu Ala
       755   760   765

Phe Ala Lys Glu Lys Ser Phe Gly Trp Pro Ser Phe Ile Thr Tyr Thr
     770   775   780

Val Gly Val Ser Asp Pro Ala Ala Gly Ser Gln Gly Pro Leu Ser Thr
785   790   795   800

Thr Leu Thr Phe Ser Ser Pro Val Thr Asn Gln Ala Ile Ala Ile Pro
          805   810   815

Val Thr Val Ala Phe Val Met Asp Arg Arg Gly Pro Gly Pro Tyr Gly
        820   825   830

Ala Ser Leu Phe Gln His Phe Leu Asp Ser Tyr Gln Val Met Phe Phe
       835   840   845

Thr Leu Phe Ala Leu Leu Ala Gly Thr Ala Val Met Ile Ile Ala Tyr
    850   855   860

His Thr Val Cys Thr Pro Arg Asp Leu Ala Val Pro Ala Ala Leu Thr
865   870   875   880

Pro Arg Ala Ser Pro Gly His Ser Pro His Tyr Phe Ala Ala Ser Ser
        885   890   895

Pro Thr Ser Pro Asn Ala Leu Pro Pro Ala Arg Lys Ala Ser Pro Pro
        900   905   910

Ser Gly Leu Trp Ser Pro Ala Tyr Ala Ser His
       915   920

<210> 120
<211> 1270
<212> PRT
<213> Homo sapiens

<400> 120
Arg Asp Phe Gln Ser Glu Val Leu Leu Ser Ala Met Glu Leu Phe His
  1   5   10   15

Met Thr Ser Gly Gly Asp Ala Ala Met Phe Arg Asp Gly Lys Glu Pro
        20   25   30

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Gln Pro Ser Ala Glu Ala Ala Ala Ala Pro Ser Leu Ala Asn Ile Ser
        35                  40                  45

Cys Phe Thr Gln Lys Leu Val Glu Lys Leu Tyr Ser Gly Met Phe Ser
        50                  55                  60

Ala Asp Pro Arg His Ile Leu Leu Phe Ile Leu Glu His Ile Met Val
65                  70                  75                      80

Val Ile Glu Thr Ala Ser Ser Gln Arg Asp Thr Val Leu Ser Thr Leu
                85                  90                      95

Tyr Ser Ser Leu Asn Lys Val Ile Leu Tyr Cys Leu Ser Lys Pro Gln
            100                 105                 110

Gln Ser Leu Ser Glu Cys Leu Gly Leu Leu Ser Ile Leu Gly Phe Leu
        115                 120                 125

Gln Glu His Trp Asp Val Val Phe Ala Thr Tyr Asn Ser Asn Ile Ser
        130                 135                 140

Phe Leu Leu Cys Leu Met His Cys Leu Leu Leu Leu Asn Glu Arg Ser
145                 150                 155                 160

Tyr Pro Glu Gly Phe Gly Leu Glu Pro Lys Pro Arg Met Ser Thr Tyr
                165                 170                 175

His Gln Val Phe Leu Ser Pro Asn Glu Asp Val Lys Glu Lys Arg Glu
            180                 185                 190

Asp Leu Pro Ser Leu Ser Asp Val Gln His Asn Ile Gln Lys Thr Val
        195                 200                 205

Gln Thr Leu Trp Gln Gln Leu Val Ala Gln Arg Gln Gln Thr Leu Glu
        210                 215                 220

Asp Ala Phe Lys Ile Asp Leu Ser Val Lys Pro Gly Glu Arg Glu Val
225                 230                 235                 240

Lys Ile Glu Glu Val Thr Pro Leu Trp Glu Glu Thr Met Leu Lys Ala
                245                 250                 255

Trp Gln His Tyr Leu Ala Ser Glu Lys Lys Ser Leu Ala Ser Arg Ser
            260                 265                 270

Asn Val Ala His His Ser Lys Val Thr Leu Trp Ser Gly Ser Leu Ser
        275                 280                 285

Ser Ala Met Lys Leu Met Pro Gly Arg Gln Ala Lys Asp Pro Glu Cys
        290                 295                 300

Lys Thr Glu Asp Phe Val Ser Cys Ile Glu Asn Tyr Arg Arg Arg Gly
305                 310                 315                 320

Gln Glu Leu Tyr Ala Ser Leu Tyr Lys Asp His Val Gln Arg Arg Lys
            325                 330                 335

Cys Gly Asn Ile Lys Ala Ala Asn Ala Trp Ala Arg Ile Gln Glu Gln
            340                 345                 350
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Leu Phe Gly Glu Leu Gly Leu Trp Ser Gln Gly Glu Glu Thr Lys Pro
        355             360             365

Cys Ser Pro Trp Glu Leu Asp Trp Arg Glu Gly Pro Ala Arg Met Arg
    370             375             380

Lys Arg Ile Lys Arg Leu Ser Pro Leu Glu Ala Leu Ser Ser Gly Arg
385             390             395             400

His Lys Glu Ser Gln Asp Lys Asn Asp His Ile Ser Gln Thr Asn Ala
            405             410             415

Glu Asn Gln Asp Glu Leu Thr Leu Arg Glu Ala Glu Gly Glu Pro Asp
            420             425             430

Glu Val Gly Val Asp Cys Thr Gln Leu Thr Phe Phe Pro Ala Leu His
        435             440             445

Glu Ser Leu His Ser Glu Asp Phe Leu Glu Leu Cys Arg Glu Arg Gln
    450             455             460

Val Ile Leu Gln Glu Leu Leu Asp Lys Glu Lys Val Thr Gln Lys Phe
465             470             475             480

Ser Leu Val Ile Val Gln Gly His Leu Val Ser Glu Gly Val Leu Leu
            485             490             495

Phe Gly His Gln His Phe Tyr Ile Cys Glu Asn Phe Thr Leu Ser Pro
            500             505             510

Thr Gly Asp Val Tyr Cys Thr Arg His Cys Leu Ser Asn Ile Ser Asp
        515             520             525

Pro Phe Ile Phe Asn Leu Cys Ser Lys Asp Arg Ser Thr Asp His Tyr
    530             535             540

Ser Cys Gln Cys His Ser Tyr Ala Asp Met Arg Glu Leu Arg Gln Ala
545             550             555             560

Arg Phe Leu Leu Gln Asp Ile Ala Leu Glu Ile Phe Phe His Asn Gly
            565             570             575

Tyr Ser Lys Phe Leu Val Phe Tyr Asn Asn Asp Arg Ser Lys Ala Phe
            580             585             590

Lys Ser Phe Cys Ser Phe Gln Pro Ser Leu Lys Gly Lys Ala Thr Ser
    595             600             605

Glu Asp Thr Leu Asn Leu Arg Arg Tyr Pro Gly Ser Asp Arg Ile Met
    610             615             620

Leu Gln Lys Trp Gln Lys Arg Asp Ile Ser Asn Phe Glu Tyr Leu Met
625             630             635             640

Tyr Leu Asn Thr Ala Ala Gly Arg Thr Cys Asn Asp Tyr Met Gln Tyr
            645             650             655

Pro Val Phe Pro Trp Val Leu Ala Asp Tyr Thr Ser Glu Thr Leu Asn
            660             665             670
```

115

Leu Ala Asn Pro Lys Ile Phe Arg Asp Leu Ser Lys Pro Met Gly Ala
        675   680   685

Gln Thr Lys Glu Arg Lys Leu Lys Phe Ile Gln Arg Phe Lys Glu Val
        690   695   700

Glu Lys Thr Glu Gly Asp Met Thr Val Gln Cys His Tyr Tyr Thr His
705   710   715   720

Tyr Ser Ser Ala Ile Ile Val Ala Ser Tyr Leu Val Arg Met Pro Pro
                725   730   735

Phe Thr Gln Ala Phe Cys Ala Leu Gln Gly Gly Ser Phe Asp Val Ala
            740   745   750

Asp Arg Met Phe His Ser Val Lys Ser Thr Trp Glu Ser Ala Ser Arg
        755   760   765

Glu Asn Met Ser Asp Val Arg Glu Leu Thr Pro Glu Phe Phe Tyr Leu
    770   775   780

Pro Glu Phe Leu Thr Asn Cys Asn Gly Val Glu Phe Gly Cys Met Gln
785   790   795   800

Asp Gly Thr Val Leu Gly Asp Val Gln Leu Pro Pro Trp Ala Asp Gly
            805   810   815

Asp Pro Arg Lys Phe Ile Ser Leu His Arg Lys Ala Leu Glu Ser Asp
        820   825   830

Phe Val Ser Ala Asn Leu His His Trp Ile Asp Leu Ile Phe Gly Tyr
        835   840   845

Lys Gln Gln Gly Pro Ala Ala Val Asp Ala Val Asn Ile Phe His Pro
    850   855   860

Tyr Phe Tyr Gly Asp Arg Met Asp Leu Ser Ser Ile Thr Asp Pro Leu
865   870   875   880

Ile Lys Ser Thr Ile Leu Gly Phe Val Ser Asn Phe Gly Gln Val Pro
                885   890   895

Lys Gln Leu Phe Thr Lys Pro His Pro Ala Arg Thr Ala Ala Gly Lys
            900   905   910

Pro Leu Pro Gly Lys Asp Val Ser Thr Pro Val Ser Leu Pro Gly His
        915   920   925

Pro Gln Pro Phe Phe Tyr Ser Leu Gln Ser Leu Arg Pro Ser Gln Val
    930   935   940

Thr Val Lys Asp Met Tyr Leu Phe Ser Leu Gly Ser Glu Ser Pro Lys
945   950   955   960

Gly Ala Ile Gly His Ile Val Ser Thr Glu Lys Thr Ile Leu Ala Val
                965   970   975

Glu Arg Asn Lys Val Leu Leu Pro Pro Leu Trp Asn Arg Thr Phe Ser
            980   985   990

116

Trp Gly Phe Asp Asp Phe Ser Cys Cys Leu Gly Ser Tyr Gly Ser Asp
        995   1000   1005

Lys Val Leu Met Thr Phe Glu Asn Leu Ala Ala Trp Gly Arg Cys Leu
    1010   1015   1020

Cys Ala Val Cys Pro Ser Pro Thr Thr Ile Val Thr Ser Gly Thr Ser
1025   1030   1035   1040

Thr Val Val Cys Val Trp Glu Leu Ser Met Thr Lys Gly Arg Pro Arg
            1045   1050   1055

Gly Leu Arg Leu Arg Gln Ala Leu Tyr Gly His Thr Gln Ala Val Thr
        1060   1065   1070

Cys Leu Ala Ala Ser Val Thr Phe Ser Leu Leu Val Ser Gly Ser Gln
        1075   1080   1085

Asp Cys Thr Cys Ile Leu Trp Asp Leu Asp His Leu Thr His Val Thr
        1090   1095   1100

Arg Leu Pro Ala His Arg Glu Gly Ile Ser Ala Ile Thr Ile Ser Asp
1105   1110   1115   1120

Val Ser Gly Thr Ile Val Ser Cys Ala Gly Ala His Leu Ser Leu Trp
            1125   I130   1135

Asn Val Asn Gly Gln Pro Leu Ala Ser Ile Thr Thr Ala Trp Gly Pro
        1140   1145   1150

Glu Gly Ala Ile Thr Cys Cys Cys Leu Met Glu Gly Pro Ala Trp Asp
        1155   1160   1165

Thr Ser Gln Ile Ile Ile Thr Gly Ser Gln Asp Gly Met Val Arg Val
    1170   1175   1180

Trp Lys Thr Glu Asp Val Lys Met Ser Val Pro Gly Arg Pro Ala Gly
1185   1190   1195   1200

Glu Glu Pro Leu Ala Gln Pro Pro Ser Pro Arg Gly His Lys Trp Glu
            1205   1210   1215

Lys Asn Leu Ala Leu Ser Arg Glu Leu Asp Val Ser Ile Ala Leu Thr
        1220   1225   1230

Gly Lys Pro Ser Lys Thr Ser Pro Ala Val Thr Ala Leu Ala Val Ser
        1235   1240   1245

Arg Asn His Thr Lys Leu Leu Val Gly Asp Glu Arg Gly Arg Ile Phe
    1250   1255   1260

Cys Trp Ser Ala Asp Gly
1265   1270

<210> 121
<211> 647
<212> PRT
<213> Homo sapiens

117

<400> 121

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Met Leu Gln Lys Trp Gln Lys Arg Asp Ile Ser Asn Phe Glu Tyr Leu
 1               5                  10                  15

Met Tyr Leu Asn Thr Ala Ala Gly Arg Thr Cys Asn Asp Tyr Met Gln
            20                  25                  30

Tyr Pro Val Phe Pro Trp Val Leu Ala Asp Tyr Thr Ser Glu Thr Leu
            35                  40                  45

Asn Leu Ala Asn Pro Lys Ile Phe Arg Asp Leu Ser Lys Pro Met Gly
    50                  55                  60

Ala Gln Thr Lys Glu Arg Lys Leu Lys Phe Ile Gln Arg Phe Lys Glu
65                  70                  75                  80

Val Glu Lys Thr Glu Gly Asp Met Thr Val Gln Cys His Tyr Tyr Thr
                85                  90                  95

His Tyr Ser Ser Ala Ile Ile Val Ala Ser Tyr Leu Val Arg Met Pro
            100                 105                 110

Pro Phe Thr Gln Ala Phe Cys Ala Leu Gln Gly Gly Ser Phe Asp Val
        115                 120                 125

Ala Asp Arg Met Phe His Ser Val Lys Ser Thr Trp Glu Ser Ala Ser
    130                 135                 140

Arg Glu Asn Met Ser Asp Val Arg Glu Leu Thr Pro Glu Phe Phe Tyr
145                 150                 155                 160

Leu Pro Glu Phe Leu Thr Asn Cys Asn Gly Val Glu Phe Gly Cys Met
            165                 170                 175

Gln Asp Gly Thr Val Leu Gly Asp Val Gln Leu Pro Pro Trp Ala Asp
            180                 185                 190

Gly Asp Pro Arg Lys Phe Ile Ser Leu His Arg Lys Ala Leu Glu Ser
            195                 200                 205

Asp Phe Val Ser Ala Asn Leu His His Trp Ile Asp Leu Ile Phe Gly
    210                 215                 220

Tyr Lys Gln Gln Gly Pro Ala Ala Val Asp Ala Val Asn Ile Phe His
225                 230                 235                 240

Pro Tyr Phe Tyr Gly Asp Arg Met Asp Leu Ser Ser Ile Thr Asp Pro
            245                 250                 255

Leu Ile Lys Ser Thr Ile Leu Gly Phe Val Ser Asn Phe Gly Gln Val
            260                 265                 270

Pro Lys Gln Leu Phe Thr Lys Pro His Pro Ala Arg Thr Ala Ala Gly
        275                 280                 285

Lys Pro Leu Pro Gly Lys Asp Val Ser Thr Pro Val Ser Leu Pro Gly
    290                 295                 300

His Pro Gln Pro Phe Phe Tyr Ser Leu Gln Ser Leu Arg Pro Ser Gln
305                 310                 315                 320
```

118

```
Val Thr Val Lys Asp Met Tyr Leu Phe Ser Leu Gly Ser Glu Ser Pro
            325             330             335

Lys Gly Ala Ile Gly His Ile Val Ser Thr Glu Lys Thr Ile Leu Ala
            340             345             350

Val Glu Arg Asn Lys Val Leu Leu Pro Pro Leu Trp Asn Arg Thr Phe
        355             360             365

Ser Trp Gly Phe Asp Asp Phe Ser Cys Cys Leu Gly Ser Tyr Gly Ser
    370             375             380

Asp Lys Val Leu Met Thr Phe Glu Asn Leu Ala Ala Trp Gly Arg Cys
385             390             395             400

Leu Cys Ala Val Cys Pro Ser Pro Thr Thr Ile Val Thr Ser Gly Thr
            405             410             415

Ser Thr Val Val Cys Val Trp Glu Leu Ser Met Thr Lys Gly Arg Pro
            420             425             430

Arg Gly Leu Arg Leu Arg Gln Ala Leu Tyr Gly His Thr Gln Ala Val
        435             440             445

Thr Cys Leu Ala Ala Ser Val Thr Phe Ser Leu Leu Val Ser Gly Ser
    450             455             460

Gln Asp Cys Thr Cys Ile Leu Trp Asp Leu Asp His Leu Thr His Val
465             470             475             480

Thr Arg Leu Pro Ala His Arg Glu Gly Ile Ser Ala Ile Thr Ile Ser
            485             490             495

Asp Val Ser Gly Thr Ile Val Ser Cys Ala Gly Ala His Leu Ser Leu
            500             505             510

Trp Asn Val Asn Gly Gln Pro Leu Ala Ser Ile Thr Thr Ala Trp Gly
            515             520             525

Pro Glu Gly Ala Ile Thr Cys Cys Cys Leu Met Glu Gly Pro Ala Trp
    530             535             540

Asp Thr Ser Gln Ile Ile Ile Thr Gly Ser Gln Asp Gly Met Val Arg
545             550             555             560

Val Trp Lys Thr Glu Asp Val Lys Met Ser Val Pro Gly Arg Pro Ala
            565             570             575

Gly Glu Glu Pro Leu Ala Gln Pro Pro Ser Pro Arg Gly His Lys Trp
            580             585             590

Glu Lys Asn Leu Ala Leu Ser Arg Glu Leu Asp Val Ser Ile Ala Leu
        595             600             605

Thr Gly Lys Pro Ser Lys Thr Ser Pro Ala Val Thr Ala Leu Ala Val
    610             615             620
```

119

Ser Arg Asn His Thr Lys Leu Leu Val Gly Asp Glu Arg Gly Arg Ile
625   630   635   640

Phe Cys Trp Ser Ala Asp Gly
                645

<210> 122
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:PCR
      amplification primer PDM-797

<400> 122
gtgtcacaat ctacagtcag gcaggattct cc   32

<210> 123
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:PCR
      amplification primer PDM-799

<400> 123
gttatgtagc ggccgcttat catgttgctg cagag   35

<210> 124
<211> 980
<212> DNA
<213> Homo sapiens

<400> 124
gccgctgccg ctccaggaga caggttccca tgcaggaatg aaagacatgg aagggaagag 60
gggggccagc tccctgagtc ctgtgtccac cagctgctgc taaatacctc tgagaaactc 120
tgcttctatc taaggggacc tacttctctc gggaatctca atacttggaa caagaacctc 180
ctagacggac cctttggcat aatgaattgg accaactgta ggttccagga ctagagagcc 240
agcaatgcct ccatgaacaa tctcacccaa ttactctgct caggaaacga ggtaactgat 300
ggacagccga ggcagcccct taggcggctt aggcctcccc tgtggagcat ccctgaggcg 360
gactccggcc agcccgagtg atgcgatcca aagagcactc ccgggtagga aattgccccg 420
gtggaatgcc tcaccagagc agcgtgtagc agttccctgt ggaggattaa cacagtggct 480
gaacaccggg aaggaactgg cacttggagt ccggacatct gaaacttgta gactgggagc 540
tgtacatgga tgggagcagc ttcaccaacc cctgcaaagt gactctgaag aagacgacaa 600
gccctgctcc agtcacaccc ggaagctgac tggtccacgc acagctgaag catgaggaaa 660
ctcatcgcgg gactaatttt ccttaaaatt tagacttgca cagtaaggac ttcaactgac 720
cttcctcaga ctgagaactg tttccagtat atacatcaag tcactgaggt aggacaaaag 780
attgctacat tcctattatt ttaaggttac attttggggg acccctcttt cttctgttct 840
agctattacc tttcttgtgt cacctagaaa aggaccagtc cttaattgta tttttaaaaac 900
tgtgatcatg ggaagcttta aattggttca ataacacgca tcaagttggt tatttcctgg 960
gctacatacc ttggatagat   980